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Our health, Our choices:

A case study of adolescents' pregnancy prevention in Mexico City.

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Abstract

Adolescent sexual and reproductive health is crucial to sustainable development. Regional and national trends emphasise the need to address this issue. Despite national efforts, Mexico continues to have high rates of adolescent birth rates. Insufficient sex education seems to be among the factors contributing to these high rates. According to effective interventions, the integration of Comprehensive Sexuality Education (CSE) and Information and Communication Technologies (ICTs) based interventions have showed successful results to reduce adolescent unintended pregnancies. This mixed methods research case study in three schools located in Mexico City used focus groups and a survey to explore how adolescents are accessing, understanding and using information related to Sexual and Reproductive Health (SRH) and what sources of information influenced them to practice safe sex. Albert Bandura's Social Cognitive Theory was used to analyse individuals' SRH complemented by Thomson and Holland's feminist approach to health. In addition, structural and environmental factors were studied through Sommer and Mmari's model. The main findings showed misinformation among adolescents, factors that hinder female adolescents' sex practices, distrust of adolescents in parents and teachers, willingness of adolescents to use ICTs with CSE content, and ineffective institutional campaigns.

Key words: *Adolescents, Sexual and Reproductive Health, Information and Communication Technologies, Comprehensive Sexuality Education, Mexico.*

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Abbreviations

ABR	Adolescent Birth Rate
ASRH	Adolescent Sexual and Reproductive Health
CCTs	Conditional Cash Transfers
CSE	Comprehensive Sexuality Education
ENADID (Acronym in Spanish)	National Survey of Demographic Dynamics
ENAPEA (Acronym in Spanish)	National Strategy for the Prevention of Adolescent Pregnancy
EVA	Education as a Vaccine
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
ICTs	Information and Communications Technologies
IMSS (Acronym in Spanish)	Mexican Social Security Institute
INEGI (Acronym in Spanish)	National Institute of Statistics and Geography
ISSSTE (Acronym in Spanish)	Institute of Social Security and Services of State Workers
ITU	International Telecommunications Union
LAC	Latin America and the Caribbean
LUMID	Master's in International Development and Management
NCDs	Non-Communicable Diseases
OECD	Organisation for Economic Co-operation and Development
SCT	Social Cognitive Theory
SDGs	Sustainable Development Goals
SRH	Sexual and Reproductive Health
SRHR	Sexual and Reproductive Health and Rights
STIs	Sexually Transmitted Infections
SIDA	Swedish International Development Cooperation Agency
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
WHO	World Health Organisation

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1. Introduction

The Sustainable Development Goals (SGDs) will shape the international and national development priorities for all countries. This agenda addresses the economic, social and environmental dimensions of sustainable development. The new 17 goals integrate and balance these three dimensions covering areas such as poverty, inequality, food security, health and gender equality (UNSD, 2017).

However, the new development agenda does not fully approach Sexual and Reproductive Health (SRH), particularly for adolescents. SRH is crucial to sustainable development[1] as it has profound implications for human development and economic growth, it plays an important role in delivering social equity and environmental protection by reducing consumption. Furthermore, there are no specific goals for adolescents which is an alarming fact considering that 1 in 6 people in the world is an adolescent (WHO, 2016).

In this regard, the main motivation of this thesis is to address what has escaped from the SDGs, chiefly the needs and social determinants of adolescents' SRH. This study intends to do so through the case study of Mexico City, where alarming rates of unintended pregnancy remain high, denoting an urgent need to improve Sexual and Reproductive Health and Rights (SRHR). Despite national efforts to address this matter, there are still important structural and cultural challenges to be addressed to continue to implement comprehensive sexuality education (CSE), as it has proven to be effective in assisting adolescents to protect their health, well-being and dignity (UNFPA, 2017).

Hence, the main objective of this study is to gain a better understanding of how the available sources of sexual and health information influence adolescents' knowledge and likelihood to practice safe sex.

[1] It is acknowledging the existence of the UN Secretary-General's Global Strategy for Women's, Children's and Adolescents' Health initiated in 2015. However, there is just one target focused exclusively on adolescents' SHR (target 3.7).

This case study, based in Mexico City, follows a mixed methods research strategy that seeks to contribute on three aspects: visualise adolescents as capable individuals that have a saying on their own SRH, identify communication channels used by adolescents that are based on internet enabled Information and Communication Technologies (ICTs), and inform public policy through an innovative approach on how to reduce unintended adolescent pregnancies. In order to meet the research objectives, the following research questions will be employed:

- How are adolescents from three schools in Mexico City accessing, understanding and using SRH information?
- What sources of SRH information influenced adolescents to practice safe sex?[2]

This thesis is structured as follows: first, a background section contextualises the importance of adolescents' SRH and the prevalence of high adolescent birth rates in Mexico. Second, a literature review is presented to inform the underpinning causes of adolescents' risky behaviours in Mexico and review successful interventions addressing unintended pregnancies among adolescents. Third, a theoretical framework is provided with a set of conceptual tools to interpret the empirical data. Fourth, the methods section describes the mixed methods research design, limitations and ethical considerations of this study. Fifth, the empirical data is analysed and discussed. Lastly, conclusions and recommendations are presented.

[2] There were sampling challenges which hindered the possibility to answer this particular question. A discussion on this is provided in the methods and results sections of this study.

2. Background

This section aims to increase understanding on adolescents' SRH. It is divided in three parts. First, global and regional adolescent demographic trends are briefly presented to comprehend the importance of focusing on adolescents' health, including SRH. Second, the context of Latin America is presented, where adolescent birth rates remain high. It emphasises how major ongoing processes in the region such as urbanisation, economic growth, ICTs penetration and education play a role in adolescents' SRH. Third, the context of Mexico is presented reviewing demographic, social and economic trends affecting adolescents' SRH.

2.1 Why Focusing on Adolescents?

Today, the share of youth in the population is bigger than ever before and there are new understandings of adolescence[3] as a critical phase to achieving human potential. Therefore, investment in adolescent health and wellbeing needs to be at the centre of the development agenda.

By 2030, the total population of adolescents is expected to increase to 1.3 billion – despite the forecasted decline in fertility rates[4] (UNFPA, 2013: 8). There are remarkable differences of adolescent populations among regions. The proportion of adolescent populations, is a result of the demographic transition that occurs when a decline in mortality rates is later followed by a decline in fertility rates[5]. Thus, "over half of adolescents grow up in multi-burden countries, characterised

[3] Adolescence is a socially constructed concept with cultural connotations defined by WHO (2017) as "the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19". It is considered to begin with puberty, for girls "a key marker of puberty is menarche – the first menstruation – but there is no clear marker for boys" (UN, 2012:1). Therefore, there is no strict definition of when adolescence begins or ends. Consequently, it is useful to consider adolescence as two-staged: early (ages 10 to 14) and late adolescence (ages 15 to 19).

[4] Fertility rates are generally lower in high-income countries and higher in low-income countries. Accordingly, around 45 per cent of the world's population lives in countries where the fertility rate is low, another 45 per cent lives in countries where it is declining, and the remaining 10 per cent lives in countries characterised by a high fertility rate, the majority of which are in Africa (Cypher, 2014).

[5] "In the interim period, sometimes called 'youth bulge,' lower mortality rates and still-high fertility rates results in a large proportion of youth." (UNICEF, 2016) When fertility declines, a favourable age structure, growing working age population (15-64) and fewer dependents (0-14 and 65 and older), may be created. The latter is known as the *demographic dividend or demographic bonus* and it can be constrained if the population is unprepared, and every person – particularly girls – cannot pursue education or transit to adulthood assured of their human rights including SRH particularly on the timing and number of their children (UNFPA, 2016).

by high levels of diseases of poverty, injury and violence, and non-communicable diseases (NCDs)" (Patton et.al., 2016:2423).

Adolescents' health profiles differ greatly between and within regions and countries. Promoting healthy practices during adolescence is critical to prevent health problems in adulthood, and for countries' future health and social infrastructure (WHO, 2017). Further, the expansion of secondary education in many countries, particularly for girls, offers remarkable opportunities for health and wellbeing (Patton et.al, 2016). However, some countries face challenges to provide access to quality health services and education to every adolescent. The Lancet Commission on Adolescent Health and Wellbeing (2016:2424) highlights the important role of schools as a platform for health promotion that extends from the provision of essential knowledge for health, including CSE[6].

In addition, ICTs[7] offer outstanding new possibilities. Adolescents are biologically, emotionally, and developmentally primed for engagement beyond their families. That engagement is essential for their social and emotional development. Therefore, these technologies have the potential to galvanise, connect and mobilise this generation as never before (Patton et.al, 2016).

2.2 Adolescent Birth Rates

Around the globe, sixteen million female adolescents and two million girls under the age of 15 give birth every year, most of them – about 95 per cent – in low and middle-income countries. Besides, it is estimated that around three million female adolescents undergo unsafe abortions every year (WHO, 2014). Nearly half of all these adolescent pregnancies, 49 per cent, are unintended. In addition, of the 38 million female adolescents who are at risk of pregnancy while

[6] CSE is defined as "rights-based and gender-focused approach to sexuality education, whether in school or out of school" (SIDA, 2016).

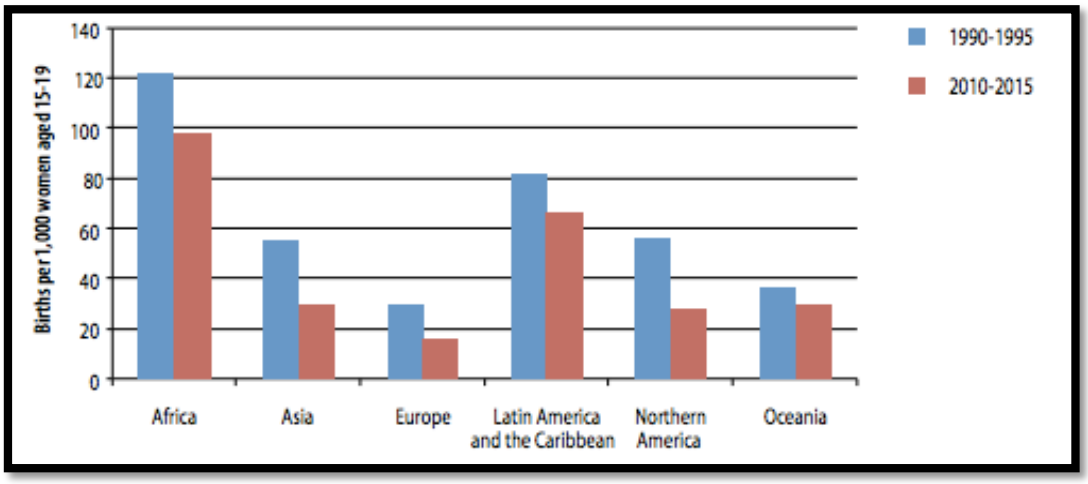
[7] ICTs in this study refer to digital technologies, specifically the internet, personal computers and mobile phones which are enabled to use applications like the World Wide Web, email, blogs, electronic archives and other social networking sites where multi-media content can be accessed and shared (SADC, 2007). Broader categories of ICTs include traditional technologies such as radio, television, satellite systems, computer and network hardware and software as well as associated services and applications such as videoconferencing and distant learning, along with Global Position Systems (GPS) and digital Geographical Information Systems (GIS) (Raftree and Bachan, 2013).

not wanting a child in the next two years, only 40 per cent are using a modern method of contraception (WHO, 2016).

When access to education and health services is insufficient, it negatively affects adolescents' health. As mentioned above, today, the proportion of adolescents who engage in risky sexual behaviours – i.e. unintended pregnancy and other sexual transmitted infections (STIs) – remains high, particularly in many developing countries, rural and marginal urban areas.

UNFPA (2013:18) has pointed out that "almost all regions appear to be moving towards a decline of adolescent pregnancies with the exception of LAC". *Figure 1.* shows the decreasing ABR in all regions. Even though Africa still has the highest rate, it appears that the rate in Latin America and the Caribbean (LAC) has been decreasing at a slower pace.

Figure 1
Adolescent Birth Rate by Region, 1990-1995 and 2010-2015



Source: UN (2015). World Fertility Patterns 2015.

2.3 Adolescent Pregnancies in Latin America and the Caribbean

The high rates of adolescents' sexual risk behaviours due to the lack of access to quality health care services and education are perplexing compared to the process of urbanisation, the increase in educational coverage and the growing female labour participation (ECLAC, 2014). These have

contributed to a decline of global fertility rates in the region, but somehow have not been sufficient to decrease ABR, especially among low income populations.

LAC economy is now slowing down, challenging the social, political and economic progress[8]. Investing in adolescents is one way to overcome these conditions. In this sense, ICTs present an opportunity for sustainable development in the region. According to the World Bank (2016b), ICTs have been an effective force for development by creating job opportunities for women, people with disabilities or people living in remote areas. In terms of education, there are also large gaps to close in LAC. Preschool is a long way from universal coverage and level of access to post-secondary education is low. The quality of education is another large outstanding debt (ECLAC, 2012). In this regard, ICTs penetration might be a potential tool to build bridges and reverse inequalities in multiple domains and in adolescent SRH.

Inequality is a common thread affecting sustainable development in LAC. In this scenario, adolescents are a population at risk. Nearly 30 per cent of young women in the region become mothers before 20 years of age and the majority of them are socioeconomically underprivileged, which fosters the intergenerational reproduction of poverty, hinders women's autonomy and their life projects, and underscores the need for sex education and reproductive health services to be made a public policy priority (ECLAC, 2014). However, socioeconomic conditions, alone, cannot fully explain high ABR in the region. The case of Mexico will highlight the remaining factors.

2.4 Adolescent Pregnancies in Mexico

Mexico is also facing high ABR and it has become extremely challenging for public policy to address it mainly because: a) adolescent women aged 15 to 19 are the largest group of women of childbearing age, b) the decline in fertility in adolescents is lower than in other age groups and c) the percentage of sexually active adolescents has increased in the last decades.

[8] LAC is expected to expand by 1.2 percent in 2017. Argentina and Brazil are coming out of recession, Mexico will keep growing, and Central America and the Caribbean will grow faster. Inequality is no longer dropping, the growth of the middle class has slowed, and nearly 39 per cent of Latin Americans remain vulnerable to falling back into poverty (World Bank, 2017a).

In terms of demographics, the country has seen significant changes in the structure of its population that have led to an aging process[9] and the creation of a demographic dividend that is expected to last only until 2025. Despite this gradual process of population aging, Mexico is still considered a young country, since 50 per cent of its population is around 25-30 years old (INEGI, 2016).

Even when it is recognised as an upper middle-income country[10] and classified as a country of high human development[11], it still faces important demographic, economic and social challenges like many countries in LAC. According to national data (CONEVAL, 2015), 46.2 per cent of the population is living in conditions of poverty (55.3 million persons).

Within this context of inequality, Mexico ranks the highest among the 34 Member Countries of OECD in ABR (Save the Children, 2016), with a record of one child born alive for every 15 girls aged 15 to 19 years old. This represents a major public health problem. Further, the age of pregnancy has decreased and, according to WHO (2017), the younger the mother, the greater the risks in childbearing. Within the country, data shows that states with higher levels of economic development have lower ABR. The same trend happens in urban as opposed to rural areas.

According to the latest National Survey (ENADID), ABR shows an odd tendency over the last years. From 1992 to 2009, there was a decrease of ABR, but in 2009 it started to increase again almost to the same rate as in 1997 (*See figure 2.)* (INEGI, 2014). Moreover, all age groups, with the exception of females 15-19 years old, show a decreasing fertility rate, which shows the urgent need to address ABR. This means that one in five women between 15 and 19 have become a mother or have experienced pregnancy (Soto, 2016).

[9] In 1974 Mexico changed its pro-natalist population policy to one directed to lower levels of fertility (Ordorica-Mellado, 2014), however it had less impact on adolescent population (Stern, 2012).
[10] In 1990, Mexico was classified by the World Bank as an upper middle-income country.
[11] The Human Development Index (HDI) is a summary measure of average achievements in key dimensions of human development: having a long and healthy life, being knowledgeable and having a decent standard of living. Mexico ranks 77th with an HDI of 0.762 (UNDP, 2016).

Figure 2
Fertility Rates in Mexico

Age Group	ENADID 1992	ENADID 1997	ENADID 2009	ENADID 2014
15-19	82.1	74.3	70.9	77.0
20-24	177.9	147.9	129.9	126.0
25-29	166.7	154.1	116.6	113.1
30-34	118.8	97.5	82.4	77.2
35-39	73.8	55.2	39.4	38.1
40-44	24.7	18.0	10.0	10.0
45-49	3.5	2.9	1.0	0.6

Source: Authors' based on INEGI (2014).

It has been shown that the sociocultural context and social inequality are factors that function as determinants of sexual risk behaviours in adolescents[12]. *Figure 3.* shows the living conditions of adolescents aged 12 to 17 in Mexico. 83.3 per cent of the population is either poor or vulnerable to poverty. This represents a major challenge in order to address adolescents' SRH.

Figure 3
Poverty and Social Deprivation, 2014 (Population 12 to 17 years old)

Indicators	%
Poverty	52.6
Moderate	41.7
Extreme	10.9
Vulnerable due to social deprivations	23.1
Vulnerable by income	7.7
Not poor and not vulnerable	16.7
Social deprivation indicators	
Educational gap	9.4
Access to health services	16.5
Access to social security	65.0
Quality and spaces of the dwelling	15.2
Access to basic services in the dwelling	25.0
Access to food	29.4

Source: Authors' based on CONEVAL and UNICEF (2014). Pobreza y derechos sociales de niñas, niños y adolescentes en México.

[12] See the literature review section for further information on the topic.

3.4.1 Adolescent Pregnancies in Mexico City

With the highest gross domestic product (GDP) per capita in the country, Mexico City is the state with the lowest proportion of adolescents and with the lowest levels of poverty and social deprivations. Also, it has reduced ABR by around 7 per cent since 2007, standing below the national average (Soto, 2016).

Soto (2016) mentions that the decreased ABR in Mexico City is related to the decriminalisation of abortion in the city[13]. However, from 2007 to 2015, 70 percent of the women that access abortion services were between 18 and 29 years old (NOTIMEX, 2015).

Within the city, the municipality of Iztapalapa has the highest rates of ABR and Benito Juárez has the lowest rates. In terms of poverty, Iztapalapa has a higher proportion of people living in poverty (37.4%) compared to Benito Juárez (8.7%) (CONEVAL, 2012).

Overall, Mexico City has shown important progress with regards to adolescents' access to education and SRH health. However, there are still important challenges in order to improve policies and programs focused on these areas. It is also crucial to understand the fact that adolescents are initiating their sexual activity earlier, on average at 15 years of age (Marie Stopes, 2017), which indicates a significant need to find ways to inform adolescents.

Despite the fact that Mexico City is considered a progressive city related to SRHR within the country and LAC region, sex education has lagged behind because of the opposition of conservative groups. These have played a significant role in protesting the introduction and update

[13] "In April 2007, Mexico City legislature passed landmark legislation decriminalizing elective abortion in the first 12 weeks of pregnancy. Shortly after being passed, the law was challenged in the Mexican Supreme Court by groups opposed to the legislation, but in August 2008, the Supreme Court voted to uphold the law" (Becker, 2013).

of sex education in Mexico since the 20th century[14] (Huska, 2016). Consequently, the implementation of CSE[15] programmes has become a major challenge[16], even for Mexico City.

Nonetheless, the Federal Government launched the National Strategy for Adolescent Pregnancy Prevention (ENAPEA)[17]. The strategy is based on previous national efforts and international experiences[18]. According to ENAPEA's indicators, it is still early to evaluate the impact of the strategy. However, there have been severe critiques. The Institute of Leadership "Simone de Beauvoir" led an investigation and found that in 2016 there was a budget cut of 45 per cent on the strategy, just two years after its launch, indicating that national priorities had changed and once again adolescents' SRHR are left behind.

3. Literature Review

Following the previous overview of the context of the study, this section's objective is to present how previous research has addressed the underpinning causes of adolescent risky behaviours in Mexico, as well as to render an assessment of a multiplicity of effective interventions to prevent unintended pregnancies. First, a review of publications will be presented in order to understand the context-specific drivers behind these issues in Mexico. This is followed by a review of interventions based on different approaches. Finally, a review of interventions focused on the

[14] In 2000, a study conducted by the Mexican Institute for Youth found that both men and women reported that their knowledge of sex education was too basic, more focused on the biology of sex than on relationships. For this reason, the Ministry of Health revised the curriculum in order to address some of these critiques. Once again, these groups were scandalised and accused the new material to be "pornographic" and "perverse".

[15] The international community made the commitment to offer CSE during the 1994 International Conference on Population and Development in Cairo.

[16] According to ENAPEA (2014), In primary school, sex education is included in the curriculum. 4th and 5th grade curricula include topics related to sex organs and in 6th grade topics related to adolescent development, hormones, adolescent pregnancy, STIs and contraception are studied. In secondary school, sex education includes a broader conception of sexuality and includes topics related to gender, affection, reproduction and pleasure.

[17] President Enrique Peña Nieto (2012-2018) presented ENAPEA on 23 January 2015. The objective is to reduce the adolescent pregnancy rate by 50 per cent and eradicate child pregnancy (10 to 14 years old) by 2030.

[18] The first programmes to attend adolescents' reproductive health were in the 80s. The Mexican Social Security Institute (IMSS) created the Department of Sexual Orientation and Education for Adolescents in 1981. The Ministry of Health, in 1984, trained primary health care personnel in Mexico City and other cities in order to provide adolescents with sexual orientation and family planning and, in 1993, the Monterrey Declaration was promulgated, which served as the basis for initiating a program of comprehensive adolescent health care, with emphasis on reproductive health.

integration of CSE as well as ICTs-based interventions to reduce adolescent unintended pregnancies will be conducted.

3.1 Adolescent Pregnancy in Mexico: Socioeconomic Determinants and its Effects

The literature on adolescent pregnancies in Mexico highlights the striking differences among the causes of adolescents' pregnancies depending on their socioeconomic status. Stern (2013) highlights how in rural areas, young adolescents who live in poverty and lack educational or employment opportunities would naturally see pregnancy or marriage before the age of 18 as a viable life project. In contrast, the behaviour of adolescents from middle and high income class in urban areas in Mexico would be influenced by a sexual revolution. This has increased the freedom to interact with the opposite sex and enhanced opportunities of sexual encounters by attending night clubs along with a rise in the consumption of alcohol and drugs.

According to Stern (2013), the main factors contributing to unintended adolescent pregnancies are: 1) socioeconomic inequality and poverty that hinder opportunities for female adolescents other than early union and maternity; 2) unequal gender relations that make female adolescents remarkably vulnerable to exercise their sexuality; and 3) significant cultural and institutional barriers on topics of sexuality and contraception. The latter include aversion to pre-marital sex among adolescents; the lack of CSE in schools and mass media along with unskilled teachers; the influence of conservative groups that block progressive social policies; the difficulty to access free or low-cost contraceptives as well as counselling for adolescents in health institutions; the lack of coordination between schools and health centres in relation to sexuality and contraceptive counselling. Further, in rural populations pregnancy is a common way or step to start a family. In marginal urban populations, with family violence and abuse, pregnancy is seen as a way out for adolescents (Stern, 2012).

In the same tenor, Echarri (2016) assesses the conditions of adolescent pregnancies in Mexico through a social differentiation perspective based on a national survey. It highlights a trend where upper-class female adolescents start having sex on average three years later than lower-class

adolescents[19]. Besides socioeconomic factors, sexual violence and adolescent pregnancy are linked in Mexico, yet the literature on this link is scarce (Echarri, 2016).

Menkes and Suárez (2003) study the characteristics of adolescent women who become pregnant. They show that an adolescent who lives in poverty and has a child at an early age is more likely to reproduce the cycle of poverty because it is placed in a vulnerable situation in terms of access to health services (for her and the baby), education, food, and opportunities of development.

Furthermore, Arceo and Campos (2014) study the impact of adolescent pregnancy on outcomes such as education, income, and labour by applying a novel strategy to the Mexican case to compare similar women in terms of observable characteristics. The results showed that the single most important effect of adolescent childbearing is a lower educational attainment of the mother, both in the short and long run. As a result, adolescent mothers tend to have a lower income per capita. Moreover, several studies agree that given the limited social mobility in Mexico, adolescent pregnancy may be a gateway into a generational poverty trap (Stern, 2012; Arceo and Campos, 2014).

Additional literature focuses on SRHR in Mexico and considers the impact of adolescent pregnancies as public health issues. Rokicki et al. (2015) reiterates that adolescent pregnancies are associated with an increased risk of unsafe abortion, low birth weight and preterm delivery, birth complications, child stunting, early school drop-out and social stigmatisation for adolescent mothers.

In Mexico, adolescent pregnancy is the fourth cause of death among the adolescent population, particularly among the 10-14 age group (Rivera et al., 2016). However, Stern (2012) argues that a pregnancy between 16 and 19 years of age does not represent a major health risk when the adequate nutrition conditions, access to prenatal care services, and favourable social and familiar environments are present. It only represents a major health risk when pregnancy occurs within two years after menarche (Fernandez, 1995).

[19] Echarri (2016) mentions that only 30 per cent of low-class female adolescents reported using contraceptives while seven out of 10 upper class female adolescents used contraceptives in their first sexual relation.

Quiroz et al. (2014) mentions that it is also necessary to address the fact that adolescents' behaviours that lead to pregnancy exposes them also to STIs, infertility or pregnancy complications. In this sense, the literature is scarce on STIs among Mexican youth[20].

Menkes (2016) renders an assessment on adolescents' SRHR in Mexico City. The study reveals that adolescents start their sexual life considerably earlier compared to other poorer states. In addition, the majority of adolescents who got pregnant were not attending school. Equally important, nearly 65 per cent of female adolescents who continued studying chose to have an abortion. A striking finding in this study is that there is a significant information gap between what adolescents have "heard" about contraceptives and the factual information that they actually know about them. As a result, the majority of them have erroneous information. Furthermore, adolescents in Mexico City have insufficient knowledge about SRHR[21].

3.2 Effective Interventions to Reduce Adolescents' Unintended Pregnancies

There is a broad range of interventions from government public health programs, development agencies, and non-governmental organisations, that have attempted to incorporate different approaches to enhance SRHR as well as to reduce unintended adolescent pregnancies. A selection of articles and reports that aim to review the effectiveness of interventions was made in order to identify recent trends. This selection was made keeping in mind that simply because an intervention has been found to be effective in one or many settings does not imply or guarantee that it will work the same way in the setting of Mexico.

3.2.1 International Interventions

Oringanje et al. (2016) conducted a rigorous review of the effects of primary interventions[22] on unintended pregnancies among adolescents in countries in Europe, the United States, Nigeria and

[20] The literature on studies and interventions related to STIs is mostly related to vulnerable groups such as underage sex workers or sexual minority groups.
[21] Only 4 percent of surveyed adolescents knew that abortion could be practiced legally under any condition before 12 weeks of gestation.
[22] Primary interventions include school-based, community/home-based, clinic-based, and faith-based interventions.

Mexico. The review assesses 53 studies taken from the Cochrane Fertility Regulation Group Specialised trial register. These were cluster randomised controlled trials, which enrolled 105,368 adolescents and were categorised in educational interventions[23], contraceptive-promoting interventions[24], and multiple interventions[25]. The review shows that multiple interventions along with skill-building promotion, lowered the risk of unintended pregnancy among adolescents significantly over the medium-term and long-term follow-up period in industrialised countries. This study concludes that to reduce unintended adolescent pregnancies, interventions should be designed to address multiple sexual and non-sexual antecedents that correlate with adolescent sexuality, and that could be linked to adolescents themselves, their families, schools, communities and cultural factors, most notably religion.

Haberland (2015) renders a similar assessment of randomised controlled trials as well as longitudinal cohort studies with controls that showed a significant reduction in pregnancy, childbearing and STIs in different countries. Effective programs, which included 22 curriculum-based sexuality education programmes included interactive, learner-centred and skills-based teaching approaches. These programs had a gender approach and a module on power dynamics in relations, which were both associated with a significant decrease in unintended pregnancies, childbearing or STIs compared to those programs that did not address these elements explicitly. All of these elements reflect an increasing call to address the multiple contextual factors that shape adolescent sexual behaviour particularly living in developing countries (Haberland, 2015).

3.2.2 Interventions in Latin America

In the Latin American context, several studies identify a trend of how different interventions have moved from improving the quality of education and health services, to seeking to elevate the cost of opportunity of getting pregnant. Additionally, they create incentive for adolescents to remain in school and/or access employment. Azevedo and Favara (2012) identify effective programs such

[23] Health education, HIV/STD education, community services, counselling only, health education plus skills-building, faith-based group or individual counselling.
[24] Contraception-education with or without contraceptive distribution.
[25] Combination of education and contraceptive interventions.

as conditional cash transfer (CCTs) schemes like *Oportunidades*[26] in Mexico or *Bolsa Familia*[27] in Brazil in which income transfers for families are linked to education, health care and nutrition. According to them, these programs have a negative causation between the benefits from CCTs and adolescent pregnancy. Additionally, Berthelon and Kruger (2011) mention that in Chile, the effect of an education reform extending school hours proved to be significant in the reduction of adolescent pregnancy. This reform resulted in a change of time allocation by adolescents and reduced almost a third of adolescent pregnancy in Chile (World Bank, 2012).

In Mexico, there have been several interventions to prevent adolescent pregnancies and STIs. The limited literature on the use of CSE in schools in Mexico (Gutierrez 2006; Givaudan et al. 2007; Gallegos et al. 2008; Martinez et al. 2012) has shown that the inclusion of several hours of active teaching as well as having access to workshops and condoms, had a positive effect on the intentions of Mexican adolescents to use condom and contraceptives. It also increased knowledge about the human immunodeficiency virus (HIV). A closer assessment on the coverage of CSE by Rojas et al. (2017) in high schools showed that the most frequently covered topics are those related to SRH and the least covered are topics on rights and relations. In this sense, there are still opportunities to include several topics from CSE as well as to ensure the continuity through all education levels (Rojas et al.,2017).

3.3 CSE as an Effective Intervention to Prevent Adolescents' Unintended Pregnancies and STIs

CSE offers a holistic vision of sexuality and sexual behaviour. According to Haberland (2005), there is clear evidence that CSE had a positive impact on sexual and reproductive health, contributing not only to reducing STIs, HIV and unintended pregnancies, but also "to improving

[26] *Oportunidades (now Prospera)* is the principal anti-poverty program of the Mexican government. It focuses on helping poor families in rural and urban communities invest in human capital – improving the education, health, and nutrition of their children – leading to the long-term improvement of their economic future and the consequent reduction of poverty in Mexico (World Bank, 2014).

[27] The Program is an innovative social initiative taken by the Brazilian Government. "It reaches 11 million families, more than 46 million people, a major portion of the country's low-income population. The model emerged in Brazil more than a decade ago and has been refined since then." (World Bank, 2016)

knowledge and self-esteem, changing attitudes, gender and social norms, and building self-efficacy"[28] (Haberland, 2015:7).

According to literature, certain factors could facilitate CSE effectiveness in reducing unintended pregnancies as well enhancing knowledge on SRHR. According to the International Technical Guidance on Sexuality Education, CSE should offer age-appropriate content starting in childhood and progressing through adolescence and adulthood (UNESCO, 2009). In addition, CSE content should also be adapted to the specific context and needs of young people, which would include understanding the messages that cultures convey around gender, sex and sexuality.

3.4 ICTs as Effective Interventions to Prevent Adolescents' Unintended Pregnancies

The literature is filled with examples of interventions based on ICTs, in order to create awareness and promote prevention of risky sexual behaviours. Villa-Torres and Svanemyr (in UNESCO 2015:28) have observed that the most significant change that could be perceived from ICT interventions is that they have been developed in partnership with young people and how well they worked as complementary delivery methods to capitalise on existing CSE information.

A recurrent disclaimer in the literature that is particularly relevant for this study is the difficulty to draw definitive conclusions about the impact of ICTs, the internet, text-messaging and more recently social media on social and/or economic development. Ackland and Tanaka (2015) underscore that the use of ICTs and social media require telecommunications infrastructure and a basic education level, thus these are only used by the relatively well-off in developing countries. In consequence, there will be urban-rural disparities in ICT use. Furthermore, the academic evidence of ICT and social media interventions in developing countries is very scarce, and where it has been shown to have a positive impact, it has only been for specific groups in society. Thus the generalisability of findings to other groups in society is not certain. Additionally, the impact of ICTs on social and economic development within a given country will be influenced by

[28] Furthermore, evidence has shown that CSE does not hasten sexual activity but has a positive impact on safer sexual behaviors and can delay sexual debut and increase condom use (UNESCO, 2009; Fonner et al, 2014).

government policies, mainly those pertaining to telecommunications infrastructure and/or education, as well as the cultural setting of the country (Ackland, 2015).

4. Theoretical Framework

Following the literature review related to socioeconomic determinants of adolescents' unintended pregnancies and the interventions to address these, this section provides a theoretical framework to assess the individual agency and structure factors that influence adolescent sexual and reproductive health (ASRH) outcomes. Albert Bandura's (2004) Social Cognitive Theory (SCT) will be used in order to analyse individual's SRH knowledge and how this influences behaviour. This will be further complemented by a feminist approach rendered by Thomson and Holland (1994), which will inform the particular challenges that women face when practicing safe sex. In addition, structural and environmental factors that also influence SRH will be addressed through Sommer and Mmari's (2015) analysis, itself based on the structural model of health behaviour by Cohen et al. (2000). In order to assess ICT access and equity, Gerster and Zimmermann's (2003) dimensions of access to ICTs will be used. Lastly, Mc Guire's Communication Persuasion Model (CPM) will provide analytical tools in order to analyse how adolescents' behaviour may be shaped by current media messages and communication strategies.

4.1 The Influence of Knowledge on Health Behaviour

SCT is one of the most widely applied theories in health promotion because it addresses both the underlying *determinants of health*[29] behaviour and methods to promote change. The model was developed by Albert Bandura based on a *reciprocal determinism* described as the way in which an individual, their environment and their behaviour have a continuous and complex interaction. The understanding of this interaction offers an important insight into how behaviour can be modified through health promotion interventions (Nutbeam et al., 2010:18).

[29] The determinants of health include: social and economic environment, physical environment, and the person's individual characteristics and behaviours (WHO, 2017).

In the SCT model, *knowledge* of health risks and benefits is the main determinant of health behaviour change. If people do not know about how their lifestyle habits affect their health, they will have no reason to change them. However, according to Bandura (2004) belief of self-efficacy is the most important prerequisite for health behaviour change. This belief can be understood as human motivation and action. "Unless people believe they can produce desired effects by their actions, they have little incentive to act or to persevere in the face of difficulties" (Bandura, 2004:144).

Further, Bandura (2004) describes how health behaviour can be also affected by the outcomes people expect their actions to produce. The outcomes have several forms: 1) physical outcomes that describe the pleasurable and aversive effects of the behaviour; 2) social outcomes relate to the approval and disapproval the behaviour produces in one's interpersonal relationships and; 3) self-regulation outcomes described as the capacity to endure positive and negative reactions in pursuit of a long-term goal (Bandura, 2004; Nutbeam et al., 2010). Furthermore, Bandura (2004) highlights the importance of goal setting. Personal goals, rooted in a value system, provide further self-incentives and guides for health habits. Long-term goals set the course of personal change. However, the regulation of behaviour is not solely personal. SCT takes into consideration impediments to healthful living, for example how health services are structured socially and economically (Bandura, 2004). These elements will be further addressed in later sections.

It is important to address the fact that this theory is not focused solely on adolescents. This may be a limitation for its use in this study.

4.2 Feminist Perspective of Women and Safe Sex

In order to inform the individual level of health behaviour, a feminist perspective of women and health will be employed. Thomson and Holland (1994) render a feminist assessment of the practices of safe sex from the perspective of young heterosexual women. The authors offer feminist-grounded theoretical concepts that seem relevant to the intended analysis in this study. Firstly, the concept of female sexual agency is raised when delving into the cultural context within which young women learn about sex. In this context, the available images tend to represent women

as passive, as victims of male sexuality, and as reproductive. This is complemented by a dichotomy of the "virgin" and the "whore" which discredits and distort expressions of female sexual agency[30].

According to these authors, young women know about the dangers of sexual activity, but they are ill equipped to confront these as they have no conception of female sexual self-interest. The context within which young women learn about sex and sexuality provides them with little conceptual ammunition with which to make informed and meaningful choices (Thomson and Holland 1994).

This approach also informs on constraints that operate on young heterosexual women and make it difficult for them to practice safer sex. These are: *contraceptive culture* and *lack of power within sexual situations*. On the one hand, the contraceptive culture in some contexts determines the man as the one responsible for providing contraception. Additionally, women are expected to act according to social norms of appropriate femininity. This stems from the idea that it is socially unacceptable for women to be knowledgeable about sex or to be seen to pursue sexual gratification (Thomson and Holland, 1994).

On the other hand, Thomson and Holland (1994) mention that women's control on relationships is determinant on the practice of safe sex. In several societies and based on gender power dynamics, many young women's objection to condom use is centred around fears of partners' disapproval and disruption of male sexual pleasure. Women are not entirely without the ability to choose, but they are constrained by the construction of sexual intercourse as a man's natural pleasure and a woman's natural duty (Thomson and Holland, 1994:24).

However, Thomson and Holland (1994) provide a feminist approach from developed countries that might not be fully applied to the Mexican context. This may be a limitation to the applicability of this theory.

[30] Agency could be interpreted as the process by which choices are made (Kabeer, 2005).

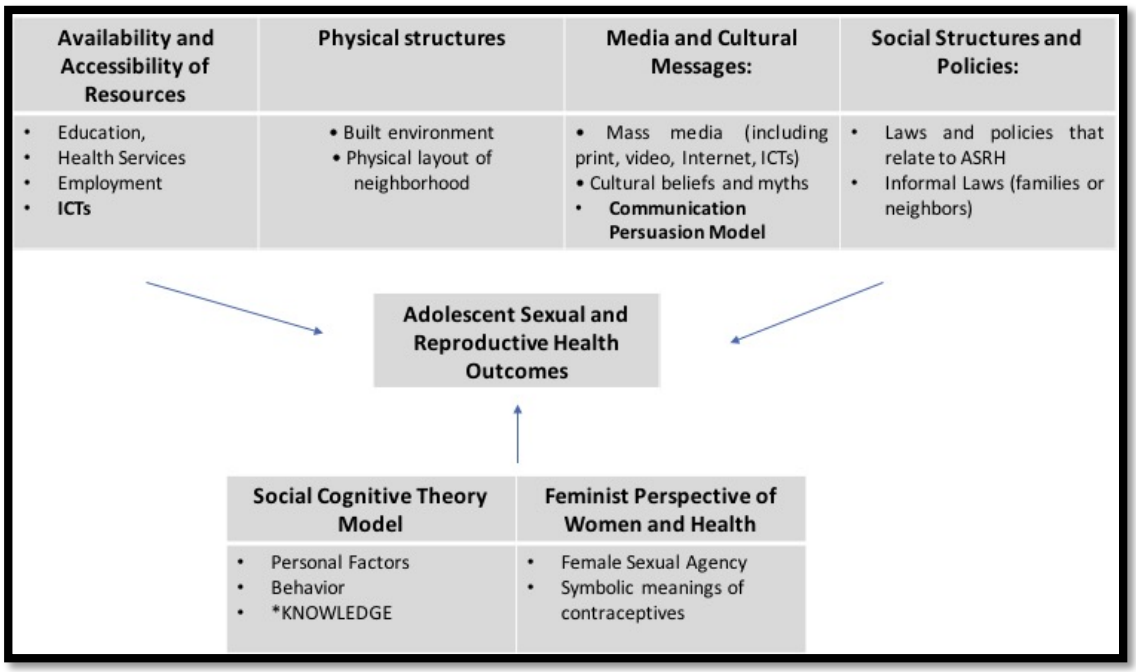
4.3 Structural and Environmental Determinants of ASRH

Sommer and Mmari (2015) underscore how the social structure and environment influence ASRH in low- and middle-income countries, and emphasise how addressing the context and social determinants[31] could render a significant health impact if incorporated into programmatic interventions and policies. The social determinants can influence health on two levels, the structural (social stratifications like economic, education, political structures and social welfare systems) and personal factors, previously discussed. According to the authors, a focus on individual behaviour change is important as it includes the strengthening of an individual's agency[32]. It is equally important to have enabling structures and environments that facilitate the behaviour change to achieve a large-scale population health impact.

For the purpose of this thesis, a slightly mended[33] structural model of health behaviour of Cohen et al. (2000) will be used to analyse four categories of structural and environmental determinants that have had an influence on ASRH outcomes. The four categories are: 1) availability and accessibility of resources, 2) physical structures, 3) social structures and policies, and 4) media and cultural messages. These are influenced by economic and gender inequalities, which are shaped by macro level forces that consist of cultural, religious, governmental, and geographical forces. There is a bidirectional relationship between each level of influence which can influence ASRH outcomes (*See figure 4.*).

[31] The social determinants which are usually out of the control of an individual refer to the "conditions in which people are born, grow, live, work, and age as well as circumstances shaped by families and communities and the distribution of money, power and resources at different levels" (Viner, 2012).
[32] Individuals' capability of achieving the kind of lives they have reason to value (Sen, 1999).
[33] As this thesis delves into the potential of ICTs to enhance CSE, accessibility to ICTs has been added to the resources that contribute to structural determinants that influence ASRH outcomes.

Figure 4
Individual and Structural Determinants of Adolescents' SRH Outcomes



Source: Authors' based on Cohen et al. (2000).

The *availability and accessibility of resources* refers to access to services that could come with barriers for adolescents (embarrassment, anxiety, social vulnerability) and the attitude of health providers. Education is another component, wherein healthy adolescents are likely to go to school and more likely to be knowledgeable about how to maintain good health, and thus delay sexual initiation, use contraception and reduce the likelihood of unintended pregnancy. Access to decent work or livelihood opportunities is a critical resource for older adolescents (Sommer and Mmari, 2015:1974). For the purpose of this study, this category is useful to integrate the implications of access to ICTs[34], which could also influence ASRH.

Physical structures that influence ASRH refer to housing and buildings as well as the layout of neighbourhoods where adolescents meet or feel safe (Sommer and Mmari, 2015).

Social structures and policies that influence ASRH refer to laws that limit high-risk behaviours and provide frameworks for encouraging low-risk behaviours such as a high legal age of marriage,

[34] See Access to ICTs in this section.

education policies to keep pregnant adolescents in school, and legality of abortion. Informal laws enforced by families or neighbours may relate to adults pushing for abstinence[35] and secrecy around discussing sexuality with teachers or parents. This would hinder the effective implementation of sexuality education messages and the changes in social structures that would enable adolescents to access contraceptives without fear and stigma (Sommer and Mmari, 2015: 1976).

Media and cultural messages that influence ASRH refer mainly to mass media exposure of adolescents to content that could accelerate earlier initiation of sex or that could misinform about the responsibilities of sexual relations. Further cultural messages on misbeliefs of condom use or the immorality of youths who are found to be carrying condoms, or messages related to masculinity and femininity norms could influence the use of contraceptives by adolescents (Sommer and Mmari, 2015: 1976). However, as mentioned in the introduction of this concept, this element will be further addressed with the *Communication Persuasion Model (CPM)*.

4.3.1 Access to ICTs

There is a prominent risk in looking at ICTs as being neutral and assuming that they will be equitably spread and accessed by everyone. The use of ICTs is often perceived to exacerbate pre-existing areas of inequity, rather than reducing them; and in consequence they can increase the divide between the poor and the rich. In order to assess ICTs access and equity, Gerster and Zimmermann's (2003) dimensions of access to ICTs will be used. These are availability, affordability and skills, such as technical abilities, language and literacy to use them.

In addition, in order to assess the access by female adolescents to ICTs, Kleine's (2013) gendered dimension of social norms will be used, as this will inform the control and the use of time and

[35] The term 'being abstinent' refers to sexual abstinence, which means not having any type of sexual intercourse or sex play with a partner. Abstinence is the only birth control method that is 100 per cent effective.

space[36]. Moreover, there is a very clear gender divide at a global level in the use of ICTs, and thus this issue could be explained by a gendered dimension to access ICTs[37].

4.4 Communication Persuasion Model (CPM)

Communication campaigns have sent messages through media to reach large audiences. Exposure to such messages is generally passive, resulting from an incidental effect of routine use of media. Some campaigns incorporate ICTs (e.g. the internet, mobile phones), but recipients have so far generally been required to actively choose to seek information, for example by clicking on a web link (Wakefiel et. al, 2010).

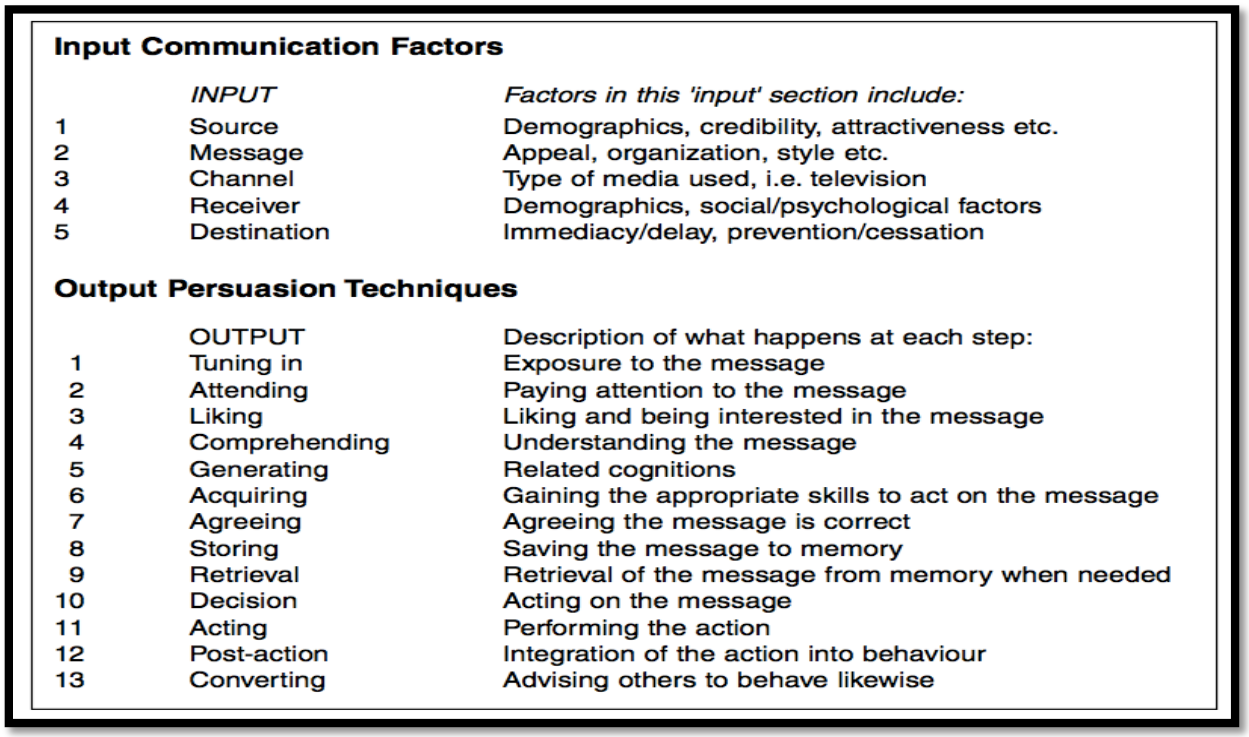
Although no specific theory has been developed to explain and predict the impact of communication campaigns, different theoretical perspectives have been used for developing comprehensive communication strategies and programs. One of the most comprehensive conceptualisations was developed by Mcguire, who suggests a model based on communication 'inputs' and 'outputs' designed to influence knowledge, attitudes and behaviour (Nutbeam et al., 2010:41).

CPM can be characterised as an input-output matrix that can be manipulated and measured to achieve change. The communication 'inputs' variables contain five separate stages of communication: source, message, channel, receiver and destination. These input variables provide options for health practitioners to select and manipulate. These 'inputs' variables are also the main step to achieving the 'outputs' variables. There are thirteen 'outputs' variables, which are a sequence of events linking the initial exposure to a message to the long-term change in behaviour (Nutbeam et al., 2010:42; Corcoran, 2007: 25). It is important to mention that these 'outputs' must take place in order to enable the message to have an effect and a change to happen (*See Figure 5*).

[36] In this sense, some girls are expected to take care of other children and look after the household adding an extra pressure to their time. For instance, literature on ICTs-use mentions that girls would have to go home directly after school so after-school computer classes would be used only by boys, or that ICT-based attendance tracking showed that girls would not be in school around religious holidays, when they were expected to help in the household with preparations for the celebration (UNICEF, 2013).

[37] The proportion of men using the internet is higher than the proportion of women with a gender gap of 12 per cent globally. Differences in levels of education and school enrolment have become factors that could explain why more men than women use the internet. Generally, developing countries with low gender parity at higher level of education are the ones with largest internet gender gaps.

Figure 5
Communication Persuasion Model



Input Communication Factors

	INPUT	*Factors in this 'input' section include:*
1	Source	Demographics, credibility, attractiveness etc.
2	Message	Appeal, organization, style etc.
3	Channel	Type of media used, i.e. television
4	Receiver	Demographics, social/psychological factors
5	Destination	Immediacy/delay, prevention/cessation

Output Persuasion Techniques

	OUTPUT	Description of what happens at each step:
1	Tuning in	Exposure to the message
2	Attending	Paying attention to the message
3	Liking	Liking and being interested in the message
4	Comprehending	Understanding the message
5	Generating	Related cognitions
6	Acquiring	Gaining the appropriate skills to act on the message
7	Agreeing	Agreeing the message is correct
8	Storing	Saving the message to memory
9	Retrieval	Retrieval of the message from memory when needed
10	Decision	Acting on the message
11	Acting	Performing the action
12	Post-action	Integration of the action into behaviour
13	Converting	Advising others to behave likewise

Source: Corcoran, N (2013). Communicating Health: Strategies for Health Promotion, n.p.: Los Angeles: Sage, 2013, pp. 23

This model shows "how difficult it can be to develop a public communication campaign that can lead to a sustainable behaviour change" (Nutbeam et al., 2010:43).

4.5 Operationalisation of Theories

This study's theoretical framework builds on an understanding of the social determinants of adolescents' sexual and reproductive health, which are defined by individual agency to access and transform information into knowledge that influences their sexual behaviour. There are also structural and environmental factors that could facilitate a positive health impact for adolescents. A focus on how the variety of concepts become relevant to the context of Mexico City will contribute in understanding how these affect the ASRH. Further, McGuire's Communication Persuasion Model (2004) will be used in order to fully assess the effectiveness of the communication campaign by Mexico's national strategy for the prevention of adolescent pregnancy, and thus identify areas of opportunities to influence ASRH.

5. Methodological Framework

Following the discussion of the theoretical tools to understand the empirical data, this section presents the data collection, the methodological choices and the limitations that were encountered while conducting the study. Additionally, a discussion is presented on the epistemological and ontological standpoints, as well as the mixed methods research strategy and the ethical considerations of this research.

5.1 Epistemological and Ontological Assumptions

The epistemological view in this study corresponds to critical realism. In this sense, the philosophical stand behind this research is grounded in the recognition of the reality of the natural order and the events and discourse of the social world, and thus, the notion that researchers will only be able to understand the social world if the structures at work that generate events and discourses are identified (Bryman, 2012). Consequently, this study seeks to identify hypothetical entities that account for regularities in the social order[38].

The identification of the context that interacts with generative mechanisms to produce or impede an observed regularity in the social world is crucial from this approach. More importantly, critical realism provides the possibility of identifying generative mechanisms to introduce changes that can transform the status quo (Bryman, 2012:29). The motivation behind the selection of this approach is grounded in its effectiveness in previous research in the field of health and public policy. This stance looks to elucidate the nature of generative mechanisms, their effects, their triggers, the ways in which these are reproduced and maintained and the ways in which can they be changed (Conelly, 2001:116).

In order to complement this position, a pragmatic research approach will be used to offer an outcome-oriented method of inquiry that goes beyond the objectivity/subjectivity dualism, and

[38] Bhaskar, the proponent of critical realism, refers to these as generative mechanisms (Bryman, 2012).

adheres to an iterative, cyclical approach to research (Cameron,2011). Thus, the ontological position for this research embraces a pluralistic viewpoint in relation to social realities.

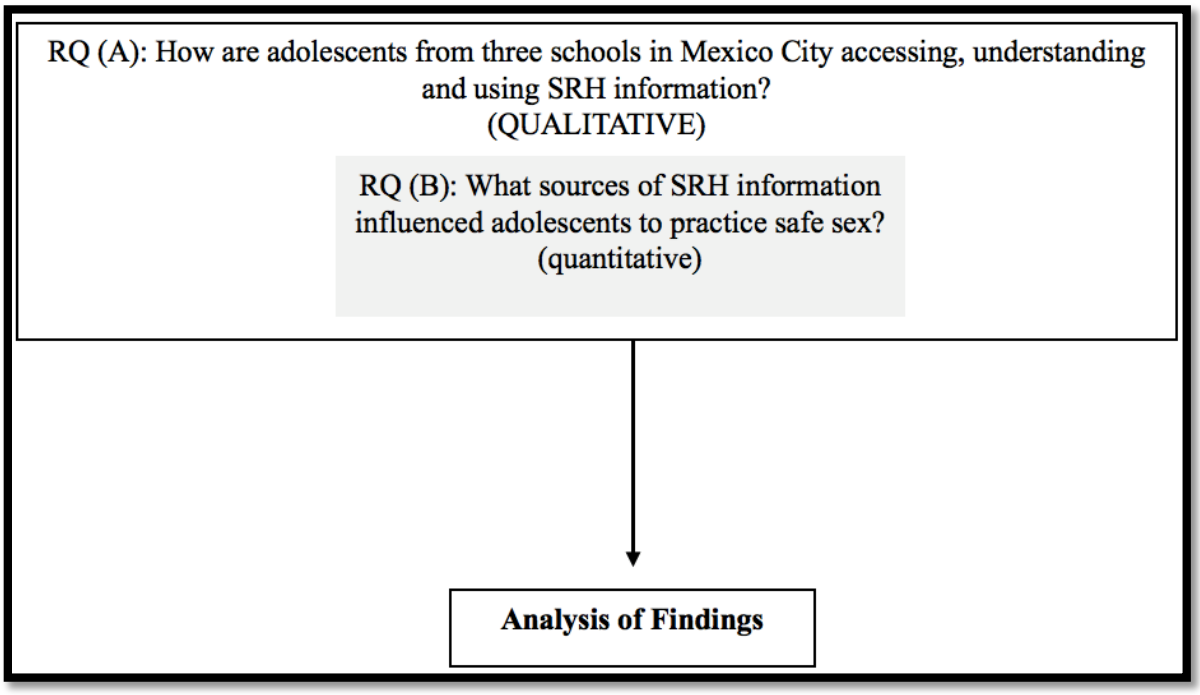
5.2 Mixed Methods Research Strategy

A mixed methods strategy[39] was selected in order to comprehend adolescents' access, understanding and use of SRH information, as well as the influence of information in their likelihood to practice safe sex. By combining methods, it is possible to provide a greater validity of the findings through triangulation, so these could be mutually corroborated. It allows to answer the different research questions discussed for the purpose of this study. The two methods could be fruitfully combined so that when one method produces unexpected results, these can be understood by employing the other (Bryman, 2012: 633).

The research takes a concurrent embedded strategy in which quantitative and qualitative data is collected concurrently and datasets are merged in order to provide a comprehensive analysis of the research problem (Creswell, 2009: 14). This approach prioritises a method that guides the project and a secondary database that provides a supporting role in the procedures (Ibid, 2009: 214). In this study, by embedding a quantitative approach into the qualitative one, both methods address different questions. The data, as Creswell (2009) suggests, resides side by side in a discussion rendering different pictures that provide an overall composites assessment of the problem. Qualitative methods are used to respond to research question (A), and quantitative methods are used to respond to research question (B). This process is outlined in the figure below.

[39] The complexity of the research problem could pose significant limitations to its understanding by either using only qualitative or quantitative methods.

Figure 6
Concurrent Embedded Mixed Methods Research Design



Source: Authors' based Creswell et al. 2003

The research design selected for this study is an exemplifying case study. This seeks to capture the circumstances and conditions of an everyday or commonplace situation which could exemplify a broader category of which it is a member (Bryman, 2012: 70). In selecting this type of design, the authors were aware that case study research cannot be generalised.

5.2.1 Qualitative Approach

The data was collected through focus group discussions in order to answer the first research question (A). These allowed to explore how the participants, with generally the same number of females and males (*see figure 7.*), view and relate to issues pertaining to SRH information sources.

Three focus groups were conducted by a main facilitator and one auxiliary that supported the discussions and assisted mainly with the distribution of materials, audio visuals and recording. The focus groups started with a role play (*See Annex 2*), followed by a round of discussions related to adolescent pregnancies and the education provided by school on issues of SRH. In addition, the participants viewed a video of the government campaign on SRH to prompt discussion on how

they would assess it. Lastly, participants were invited to create a pilot smartphone "app" with content regarding SRH. The exercise proved to be useful as interactions led participants to respond to each other's views. Detailed record was taken of group participants' views on the issues which they were confronted to (Bryman, 2012).

The three focus group sessions were recorded, transcribed and translated to English, noting not only the content of participants' interventions but also how they said it. The size of groups oscillated between seven and fifteen participants. This surpassed the recommended size of six to ten members (Bryman, 2012), but due to the nature of the topic several adolescents felt more comfortable to express their opinion in a bigger group. Participants were informed at the beginning of the discussion about the goals of the research, the reasons for recording the session, and the general format of the activities within the session. Furthermore, participants were informed that the data would be treated confidentially and undisclosed.

Figure 7
Demographic Characteristics of Focus Groups

N= 34	Number (%)
Gender	
Male	18 (52.9)
Female	16 (47.1)
Age	
14-15	29 (85.3)
16-17	5 (14.7)
Educational Level	
Middle School	27 (79.4)
High school	7 (20.5)
Participants	
Alvaro Obregón Middle School- FG01	12 (35.3)
Benito Juárez Middle School- FG02	15 (44.1)
CCH- FG03	7 (20.6)
Duration	
Alvaro Obregón- FG01	1:09:04
Benito Juárez- FG02	1:15:02
CCH- FG03	1:11:08

Source: Authors

The data was codified noting recurrent topics and significant contributions relating to the research question. A thematic analysis was considered during the coding process, which was further complemented with an iterative review of the literature in order to delineate connections between different codes identified by participants. A total of five themes and thirteen subthemes[40] were identified following Ryan and Bernard's criteria of what constitutes a theme (Bryman, 2012).

5.2.1.1 Limitations of the Qualitative Approach

The most pressing limitations were the inexperience of the main facilitator conducting focus groups, the size of groups, impossibility to address internal validity of data and technical deficiencies.

The main challenge for the facilitator of these discussions was to properly guide the session without being too intrusive, an issue that was difficult to manage due to the topic and the interest

[40] The codification was based on SRH information according to its source.

of exploring further topics relevant to the research questions, particularly when it came to formulate questions to the group in an unbiased manner. Furthermore, some of the interventions of the facilitator could have been helpful to remind participants to talk one at a time and to avoid the discussions being taken over by overly prominent participants hindering others from expressing their views.

Issues related to participant sampling and focus group sizes became problematic as securing participants depended on the disposition of the adolescents to voluntarily participate in the research during school hours. The reliance of the researchers on over-recruiting proved to be detrimental in the management of the discussion as well as in inviting reticent participants to speak up. A smaller group as the one selected in the final focus group provided greater opportunities for disagreement and the expression of different opinions[41].

Additionally, there were considerable technical shortcomings as relying on mobile phones with recording capacity made the focus group recordings difficult to transcribe. Furthermore, the fact that participants in group contexts expressed more culturally expected views is an issue that could have been mitigated by also conducting individual interviews (Bryman, 2012).

5.2.2 Quantitative Approach

The data was collected through a survey in order to answer research question (B). Public secondary schools and high schools[42] were selected to approach adolescents with the assumption that in this environment they could feel more comfortable. However, access to high schools became challenging particularly due to the sensitivity of the research topic. Therefore, 'gatekeepers' were used in order to gain access to schools in Mexico City.

Adolescents from 15 to 17 years old constituted the unit of analysis. This was selected based on national data that shows the average of the first sexual experience at the national level to be of 15.5

[41] Internal validity would have been better addressed through one-on-one interviews. However, the initial agreement with school authorities limited this.

[42] The schools were selected based on CONEVAL (2010) estimations of levels of poverty in municipalities of Mexico City. The proportion of poverty reported in Álvaro Obregón is 31.3 per cent, Coyoacán 20 per cent and Benito Juárez 8.7 per cent.

years old (Gobierno de la República, 2014). The sample was provided randomly by the school authorities. In regard to the size of the sample, it is known that the bigger the sample, the more representative the results might be (Bryman, 2012). However, in the case of this study this was also a limitation as it was previously agreed with the gatekeepers to streamline the process[43].

To obtain data, this study designed a systematic sample to answer an anonymous self-completion survey[44] of 71 questions (*See Annex 1*) with mainly binary responses. The reason for having 71 questions was to have a better understanding of the respondents and their context. Therefore, the survey included questions based on previous literature on adolescent pregnancy in Mexico. It was possible to obtain 93 self-completion surveys with a good response rate.

Descriptive statistics were used to explore which sources of information were accessed by adolescents. In addition, a binary logistic regression was selected to explore what sources of SRH information influenced them to practice safe sex. Due to the limitations (*see limitations section)*, it was not possible to run the model.

5.2.2.1 Limitations of the Quantitative Approach

Obtaining data on SRH directly from adolescents required overcoming important challenges. First of all, the study was designed to focus on a larger proportion of adolescents that were sexually active[45]. In this regard, as the sample was provided randomly by the school authorities, it limited substantially the number of cases that complied with the initial planned sample.

The context and the sensitivity of the topic of this study must also be kept in mind. The latter greatly limited the capacity to gather information on the sexual active status of respondents as they may have felt unwilling to admit having sexual intercourse. Furthermore, as the survey was conducted in classrooms, it created an environment in which respondents may have not taken the

[43] The sample provided by the school authorities was based on the participants' availability with an agreement with the researchers to avoid using extra time so that they could get back to their regular school routine as soon as possible.
[44] The survey was designed to be accessible and comprehensible by using colloquial language. It is important to mention that for the design of this survey best sellers' books on adolescent issues in Mexico authored by Yordi Rosado and Gaby Vargas, pop-culture references among teenagers, were used.
[45] In this study, 'sexually active' refers to individuals who have had sexual intercourse at least once at any point in their life involving penetration – the insertion of a man's erect penis into a woman's vagina. In contrast, respondents might have assumed that 'sexually active' referred to having had sexual intercourse recently or regularly.

survey as seriously as if they would have filled it by themselves privately[46]. In this sense, it is crucial to take into account the age of the respondents[47], as they may have felt unwilling to admit to having sexual intercourse as peers were constantly sharing and discussing their responses. This was reflected by inconsistencies in the responses to the survey (*see results section*).

Despite the fact that the design of the survey tried to avoid misinterpretations by using colloquial language, still adolescents were uncertain about the meaning of some of the questions, which impaired the study.

Another influential matter is the fact that the researchers, even as they were informed about the sensitivity of the topic and aware of the age of the respondents, they felt that they needed further training to deal with sexuality topics with adolescents.

5.3 Ethical Considerations

Following the ethical guidelines of the Master's in International Development and Management (LUMID), the participants were informed in detail about the purpose of the research and how information was going to be handled. This was mentioned to the gatekeepers but it was essential that adolescents had a complete understanding of this study. It was important they felt completely confident that all information was going to be handled with the greatest confidentiality and without value judgments.

All participants that agreed to cooperate in either method of data collection were required to give their oral consent before the data collection. In this regard, Meadow (2013) mentions the importance of talking to the participants openly not only about what they will be doing, but also how they understand what they will be doing. Following this, it was easier to obtain consent for the surveys as participants were completely sure about the anonymity of this method (*Annex 1*). With respect to the focus groups, it was expected that the role play and the creation of the pilot

[46] All surveys, as mentioned throughout this section, were anonymous. Here, it is referred that giving a private space to each respondent may have benefited this study.
[47] Adolescents are developing and consolidating their sense of self. With this increasing self-identity, including their development of sexual identity, comes growing concern about other people's opinions, particularly those of their peers (WHO, 2014a).

"app" would help them understand the purpose of the study. For example, the role play described a setting of a teen party so that participants could better relate to the topics and express themselves honestly about their self-understanding. The role play tried to avoid, as much as possible, a strong hierarchical relationship between researchers and participants, i.e. "shifting a lot of power over to the researched" (England, 1994:243). The main idea was that participants were the ones in control of the focus group whereas researchers only facilitated the discussion.

The study was planned deliberately to avoid subjects that the participants may not relate to. After all, "a researcher is positioned by her/his gender, age, "race"/ethnicity, sexual identity, and so on, as well as by her/his biography, all of which may inhibit or enable certain research method insights in the field" (England,1994:249). This was thoroughly taken into consideration in order to have a more reflexive and flexible approach during the collection of data.

A related point to consider was how to ethically approach adolescents as this study inevitably was going to provoke a disruption in their school routines and lives. Adolescents were interrupted in a regular school day to answer a survey and take part in focus groups discussions that may generate a lot of emotions and doubts. Moreover, this research about SRH may also reveal to them aspects of females' disadvantages related to social norms (Scheyvens and Leslie, 2009). Therefore, it was necessary to create conditions where both females and males were willing to open-up and engage in the discussion respectfully. Likewise, some of the questions in the survey may have generated a certain confusion. In both cases, the researchers tried to create a comfortable atmosphere for participants and were open to respond to the participants' doubts about the content as much possible.

5.4 Positionality and Reflexivity

As development practitioners from Mexico doing fieldwork research in Mexico City, the authors were not exempt of trenchant markers of difference that could have contributed to exploitive research or perpetuation of relations of domination and control throughout the research process (Sultana, 2007). As Kopayashi states, reflexivity could help assess how one is inserted in grids of power relations and how these influence methods, interpretations and knowledge production (Kobayashi in Sultana, 2007). Even though the field sites were all high schools in urban settings

and with similar socio-economic contexts as the ones both researchers were exposed to while growing up in Mexico City, the authors were in constant reflection of their positionality. The researchers were aware of their class and educational privilege, through material and symbolic differences, e.g. mainly by introducing the purpose of the research to gatekeepers and participants in order to inform a dissertation to be presented for a Master's program at a university in Sweden. Other factors such as age, gender and attire from the researchers prompted social differentiation beyond nationality by people, as school authorities and participants used the formal *usted* (you in third person) or titles like *Maestra* (teacher) to convey a respectful way of talking to someone who is older or someone that is considered to be of higher rank. However, the rounds of presentations through "breaking-the-ice" activities, allowed a way of interaction that helped build the trust between researchers and participants[48].

Furthermore, Sheyvnes and Storey (2003) guidelines for researching children and young people were followed during the planning of the focus groups as well as when writing the findings. The purpose of the research was clearly explained to adolescents. Parents and guardians were also informed about adolescents' participation through official school missives written by school authorities. Provisions to build rapport with young participants were taken at the beginning of every focus group in order to develop trust and encourage active participation. Adolescents were informed that they could withdraw from the research at any time. Minor friendly research methods were employed by engaging participants in a role play dynamic and creating posters that could prompt them to talk about SRH. Finally, throughout the research process and when reporting on findings, the authors paid attention to not misrepresent adolescents, nor portray them in an embarrassing or harmful way.

[48] This was attested by young female participants trusting and approaching the (female) auxiliary after the focus groups were done, to ask questions related to SRH. The latter helped in bridging the gender barrier that female participants could have when sharing concerns related to SRH to other male participants as well as the male monitor of the focus group.

6. Results

In this section, the empirical data from the field reveals that among the five sources of SRH information available to adolescents – friends, parents, the internet, teachers and government campaigns[49] –, it is friends and parents that constitute the most common source of information for adolescents in the sample. An analysis of the quality of the information is presented in order to clarify how adolescents' knowledge on SRH is influenced by these sources. Several challenges are also identified and discussed in order to measure the effects of SRH information on safe sex.

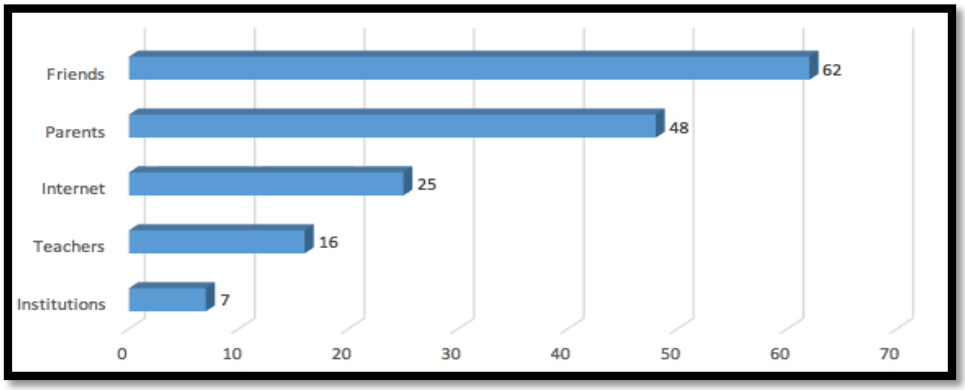
6.1 Access to Sources of SRH Information

This part focuses on the quantitative analysis of the empirical data from the survey. Descriptive statistics and frequencies are used to describe the basic features of the sample as well as to identify the sources of SRH information reported by adolescents in this study.

The main sources of SRH information come from discussing SRH issues among friends, followed closely by information discussed with parents and information found online. With regards to teachers and government institutions, these represent the least commonly reported sources of SRH information by adolescents (*See figure below*).

[49] These sources of information were selected on the basis that these are recognised effective means to influence adolescents in relation to CSE. Discussions with adolescents revealed alternative sources of information such as community faith-based groups, extra-curricular activities and programmatic interventions based on peer-to-peer education.

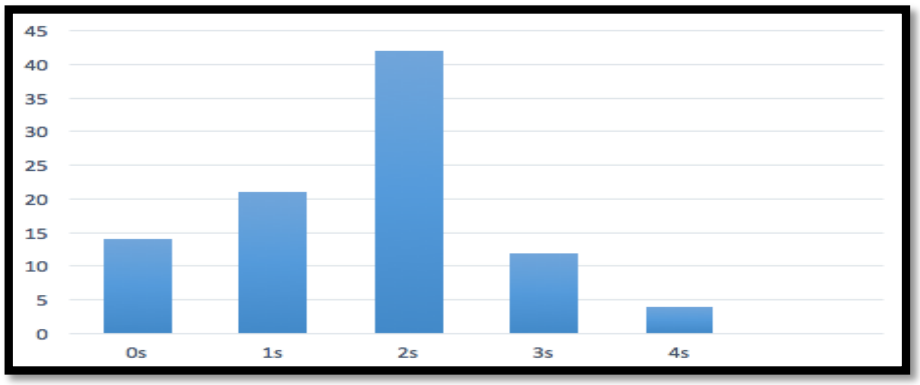
Figure 8
Most Common Sources of SRH Information (by user)



Source: Authors'

A closer look into the variance to access SRH information reveals that there are striking contrasts in the access to multiple sources by some respondents. In the sample, 42 respondents reported to have at least two sources of information in contrast with 14 respondents that reported no source of SRH information at all (*See figure below*).

Figure 9
Variance of Sources of Information by user



Source: Authors'

Based on these results, the inadequacies in SRH education and information campaigns are evident among most of adolescents in the sample. Additionally, the fact that a majority of adolescents in this sample have one or more sources of information, most commonly friends or parents, does not reveal the quality of the discussed information. Thus, it is crucial to clarify whether adolescents

are being properly informed on how to prevent risky sexual behaviours. This will be further explored in the next section.

6.2 Assessing the Quality and Use of SRH Information by Adolescents

This section highlights the most relevant findings from the thematic analysis of the qualitative data on the quality of the information adolescents are receiving, and how this information is understood and therefore influences adolescents' knowledge on SRH. This analysis will be presented according to the type of source of information.

6.2.1 Discussing SRH among Friends

A majority of adolescents in the sample reported that they prefer talking about sex to their friends. This was further explored through focus group discussions where a perceived sense of trust was revealed among peers and their partners when discussing sexual experiences, sharing doubts and even talking about aspirations and family planning.

> *"I think we talk about sex among us because we have more confidence than with teachers or our parents. And well (...) because we can share the anecdotes or what happened to you."* (Male, FG02)

Further discussion revealed that adolescents have common misconceptions on SRHR revealed in opinions based on myths, gender stereotypes, self-stigmatisation and judgmental attitudes based on social norms. Participants expressed different opinions when asked about ways to prevent pregnancies. For instance, on how the *Morning-After Pill* works:

> *"(...) but (taking the morning-after pill) it's also dangerous, the woman should go to the hospital to know what pill she should take. There is a pill that you take when you have a month or two months of gestation and what it does is that it is to kill the child. There you would have to go to the doctor because you bleed a lot. But for example, the morning after pill does not, because there is no embryo, there is nothing. Then I do not know why it can be dangerous."* (Male, FG02)

Deeper reflection on the ways that participants would react towards a situation of unintended pregnancy revealed the influence of gender roles and stereotypes in shaping their opinions. The

recounts from male participants are characterised by portraying women as being impulsive and emotional. Male participants also shared perceptions that a sexual experience would provide them with a sense of acceptance and agency that would contrast with what some of them think a woman's sexual experience would be, namely as unpleasant and where fear and anguish would prevail.

> *"Yes, I live only with women. It's horrible. Is like living with a werewolf, every 28 days come out of its cave. And is horrible. And they say, I got nothing leave me leave me, and then you hear them going into the bathroom and nothing happens." (Male, FG03)*

> *"Here as the man I feel that you will feel happy, as well as the ego very high, as in I had sex with her. (laughs) yes, its true! And since you're not going to see the woman again, then like you don't really care. And being the woman obviously, I would feel worried that you do not know what you are going to do with the child." (Male, FG03)*

Female participants have expressed normalisation of the sexist portrayal of women that was often raised during the discussions. Other opinions would constantly express the conceptions of what an ideal behaviour of women should be. Also, the legal right of opting for an abortion was mainly discarded in almost all discussions based on moral grounds.

> *"And women do look a little bad. I mean, I feel women would dare (having casual sex after drinking). But as a woman, that is, speaking for me, I say that I would not dare because at parties, I control myself a lot".* (Female, FG03)

> *"The baby is not to blame, for it to die, because a couple acting unconsciously. If it was an abuse, maybe it would be ok to abort". (*Female, FG01)

Moral considerations are present in most of the participants' responses, particularly on issues of sexual activity. This is seen in opinions that perceive abortion as a "wrong-doing" rather than a critical assessment of what it could entail. It is thus impossible to neglect the importance of morality in shaping adolescents' perceptions about sex.

> *"(...) there is a religion, I do not remember which, that it takes sexuality as bad. Everything like, in general, especially masturbating and so, takes it as bad."* (Male, FG03)

> *"(a healthy sexual life is to not) always be sharing with several, because you are not satisfied. It's not healthy, you do not have a limit and you always want more and more different people. And that is not ok and that is not right."* (Male, FG03, when asked what is a happy individual sexual life)

Adolescents' opinions revealed that the quality of the information on SRHR is deficient as it is based on uncertainty of how some contraceptives work. There are opinions that reinforce gender stereotypes as well as judgmental attitudes based on morality and social norms. The most worrying aspect is that this information is replicated and reinforced among networks of adolescents, as trust seems to be the main motivation of adolescents to consider friends as the most common source of information on sex.

6.2.2 Discussing SRH with Parents and Close Relatives

Some adolescents discussed in detail how they perceive their experience of talking about sex with their parents and relatives. Experiences of information sharing are very contrasted as some perceive affinity to talk to one parent rather than the other due to trust issues. Others were prompted by an immediate relative (elder sibling, cousin or aunt) to visit health clinics and engage in a conversation with a medical expert.

> *"My sister talks with my mom, and she speaks to us(…) she says that we have to be cautious, because there are some (contraceptives) that are not safe and there are some that may harm women such as the morning after-pill. For instance, my sister had cysts and she had hormones injected to her and she got pretty bad. Therefore, my mom said this method (pills) you have to discard it for you".* (Female, FG03)

> *"My aunt, she took me to a clinic when I had a girlfriend, and there is where we talked. With a doctor."* (Male, FG03)

Additionally, participants rely on older people to get SRH information as they seem knowledgeable due to their life experience.

> *"I spoke with my sister, she is 20 years old and I am 15 and I feel she knows more than I."* (Female, FG03)

As Svanemyr et al. (2015) mention, parents and relatives are key in shaping attitudes, norms and values related to gender roles, sexuality and the status of adolescents and young people in the community. The legitimacy that parents receive as a source of information to adolescents in the sample underlines the importance of making their involvement instrumental in providing sexuality education. The fact that some parents may feel uncomfortable or insufficiently prepared to provide

detailed information to their offspring is something that still prevails as reflected in the fact that parents were not reported as the adolescents' main source of information. Furthermore, parents' attitudes, norms and values related to gender roles and sexuality could be reinforced in adolescents and misinform them if parents are themselves uninformed or lack the ability to talk about sex.

6.2.3 Learning about SRH through the Internet

Participants shared their experience when looking for SRH information online and stated that it was a common practice whenever they had doubts. The survey showed that all respondents had access to internet enabled ICTs. To some, curiosity and embarrassment are some of the motivations to look for SRH information online rather than discussing it with someone. Equally important, participants expressed however a concern regarding the trustworthiness of the information they encountered. This is consistent with the findings from the survey, wherein 87 per cent of the sample reported that information on the internet is not trustworthy. From the description of the experience of some participants, the recurrence of contradicting information online causes frustration as it requires crosschecking with other websites and further confirmation from parents or friends.

> *"I think it's reliable but it depends on where. Because before, I used to feel shy to ask my mom. Oh, I do not know (...) I have doubts about this, or I'm afraid of that. And I felt very shy to ask my mom. And once I resorted to the internet. And check not only one page, but several, and in many they said several things and different. Then it was where I came into doubt and said, how does this or that happen? (...) then I asked my mother".* (Female, FG03)

When discussing the trustworthiness of online SRH content, almost no one mentioned how they approached websites from a critical standpoint. To some, the domain of the website or the authorship automatically vested more trust on government generated content. Clarity of the language and terminology on SRH information offered online is important to respondents, as some expressed that information offered by health counsellors is not entirely clear.

> *"I would trust Government websites (...) like the ISSSTE website (....) virtually whichever website that doesn't finish with ".com" because it is very flabby, some of them are! It's better with ".org" or ".mx" because they are already more serious."* (Male, FG 02)

> *"Yes I have used them (government websites), it is that as they are more accessible to the population, only by the language, then people understand it (...) it is easier to understand a government ad or their webpage than a doctor".* (Male, FG03)

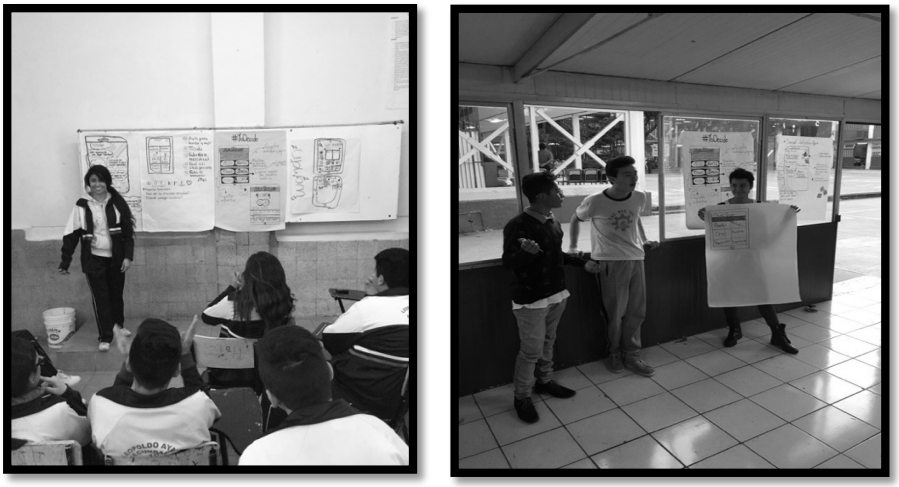
When asked about mobile apps that were designed specifically for purposes related to SRH, few participants knew about them. Of the minority of participants that did, all were female respondents. They shared how some features seemed relevant to their use, and also how most of these apps were offering information in English.

> *"Yes (...) I've heard about one, it was called "Eve" and it was for your period (...). And other ones but in English.*" (Female, FG 01)

During the focus groups, adolescents were invited to participate in an activity where they would come up with their own design of a mobile app that could integrate any component they deemed relevant in relation to their doubts and concerns on SRH (see *figure 10.*). A common theme that was raised during the discussions was the importance of having an interactive feature that would ensure the confidentiality of the users when posting questions or engaging in real time chats with sexual health experts. The latter revealed an eagerness to engage in dialogue about SRH.

> *"Our app is called, "Goodbye Shame" and it has different options and you can press on the orange buttons and it takes you to everything related to women (...) For example, if you have cramps and such things, you can chat with a doctor, and if she is female so you could trust her. You also have a journal and it is anonymous." (Female, FG 01)*

Figure 10
Students presenting their SRH Mobile Apps



Source: Authors' records 2017

Further discussions revealed a series of topics that adolescents were interested in learning about online. On the one side, adolescents identified topics related to pregnancy, STIs, contraception and information about the body in almost all their app designs. On the other, there were other topics in the realms of pleasure-based and experiential sex, sexual positions and behaviours, costs and location of clinics as well as communication and social skills. Adolescents' interest in sex and behaviours included questions related to which position would be more pleasurable, practicing anal or oral sex, using sex toys, how women could have more control during sex and issues around masturbation. Other interests were raised such as costs, location, requirements and time considerations related to abortion. Several suggestions were made about mapping clinics through a GPS-based technology to locate nearby pharmacies or clinics.

> *"Many people know (...) that if they get pregnant they want the abortion but they do not have the necessary information. They do not know how much they have to pay, they do not know where they have to go, what permits they need, how long they need the abortion. (...) For this, our app has an open chat for the people of our application that can talk about any topic ... let's say if a person mmm (...) what position do you feel better? Or what if I have anal sex or things like that, people are going to respond. Obviously, it's going to try to be serious." (Male 15, FG02)*

The use of internet through ICTs to access SRH information is something common among adolescents in the sample. Issues of trustworthiness, accessibility, confidentiality and real-time support are important determinants when sifting through SRH information online. The language

was identified as a potential barrier that could deter from the use of mobile apps to inform adolescents' SRH in this sample. The variety of topics that adolescents search online related to pleasure-based and experiential sex should serve as a warning, since adolescents could be subjected to online grooming[50] if their natural curiosity about sex is not met through safe channels.

6.2.4 Learning about SRH at Schools and from Government Campaigns

Discussions during the focus groups revealed a lack of continuous exposure to sexual education in schools as participants could not recall a specific class where issues of SRH were systematically reviewed. This goes hand-in-hand which what was revealed in the survey, as 57 per cent of adolescents consider that the sex information provided to them in school is not sufficient. Furthermore, some participants refer to sporadic government campaigns by institutions where information and contraceptives were given in open spaces within school premises.

> *"We do not have classes on sex education (…) there are issues like they raise up sometimes but we do not go deep into them."* (Male, FG03)

> *"Here on the school patio, some people from the IMSS came to talk, and with contraceptive methods, and you passed and they just gave you a strip of 10 condoms*."(Female, FG03)

> *"Sometimes people come…to give us classes about prevention. They teach us how to use condoms. And I like those classes because they inform me about things that maybe I don't know or about things that I do know but then they become clearer."* (Male, FG02)

A majority of adolescents seem to be unaware of the government campaigns on SRH. When exposed to them they perceive the information as lacking veracity and do not seem interested in proactively referring to the provided sources of information. Based on a video[51] participants were asked to reflect on its content and whether they find it useful. Most of the participants have never accessed the platform where the video was hosted which coincided with the overall response from

[50] Online grooming is the process of establishing communication with a child/adolescent over the internet with the intention to lure, manipulate or incite the minor to engage in sexual activities. Sexual activities include conduct beyond the physical meeting with the offender, such as sexual abuse of a child via a webcam or the production of child sexual abuse material or self-generated sexual materials (ECPAT, 2015).

[51] Adolescents who participated in the focus group were shown a 5-minute video from an official government online platform dedicated to inform on how to prevent unintended pregnancies in Mexico. The website "Comolehago.org" (*WhatcanIdo.org*) is an online initiative from the National Institute for Women and the National Institute for Public Health in sync with ENAPEA. It offers blogs, advice, videos and educational information on SRH.

the survey. Only 18 per cent of the sample reported hearing about this platform before answering the survey. Some of the participants did not feel that they identified with the actors or the situations portrayed in the video[52] and expressed that, regardless of the sex of the person giving the information, what mattered the most was the knowledge that each person has on these issues.

> *Male participant: They overact a lot,*
> *Female participant: Very much!*
> *Male participant: It's like, let's go to the health centre guys ! Come on guys!*
> *Female participant: Yes, in the waiting room and super excited waiting. (Laughs)*
> *Moderator: What did you think about the couple? Would you trust him to give you this information?*
> *Male participant: It depends on how much you know about that issue, it does not matter whether it is woman or man, but the knowledge that he or she has. (FG 02)*

Sporadic sexuality education and government campaigns are symptomatic of the pressing need to enhance teaching about sexuality by providing scientifically accurate and non-judgemental information.

The analysis of different sources of information renders how these influence the adolescents' perspective on SRH, however this study ponders into what effect these sources of information have on the practice of safe sex. An attempt of this will be presented in the coming section.

6.3 Effects of accessed Information on the Reduction of Risky Sexual Behaviour

Based on the assessment of the different sources of information and the analysis of their quality, this section shows how this study wanted to inform the effect of information that influences adolescents to avoid risky sexual behaviours i.e. unsafe sex. This was attempted through the use of a binary logistic regression[53]. For reasons elaborated below, however, running the model was not possible.

[52] A male and a female adolescent couple attending a "Youth-friendly clinic" in Mexico City in order to get contraceptives.

[53] Binary variables in this regression indicate if a condition is present or not. Many type of events do not fall on continua; they exist in a binary form, e.g. people are either living or dead. In this study people in our sample either engage in safe sex practices or not.

A statistic model with a binary dependent variable (Y) was defined as:

$y = \begin{cases} 0 \\ 1 \end{cases}$ which means:

0 = (had used contraception = safe sex)
1 = (had sex without contraception = unsafe sex)

In this regard, a question from the survey[54] with a binary response was used:

- Did you use contraception in your last sexual encounter? (Yes / No)

This model included five independent variables defined from five different questions from the survey that had binary responses (*See Annex 1*): sexual information received by internet (x_1), sexual information received by friends (x_2), sexual information received by parents (x_3), sexual information received by teachers (x_4), sexual information received by institutions (x_5)[55].

When the mentioned variables were explored, only the results from the dependent variable (Y) were unexpected as three categories were obtained instead of the expected two. When respondents were asked if they used contraception in their last sexual encounter, 36 reported using contraception, 13 did not use contraception and 44 did not answer the question (NA).

Due to the characteristics of the sample it was inferred that those respondents that did not answer the question (NA) might have done so because they were not sexually active. In order to be certain, another question from the survey was used to corroborate the sexual status of the respondents:

- Are you sexually active? (Yes / No)

When cross tabulating the responses, instead of clarifying the sexual activity of respondents, an additional issue arose which relates to the fact that respondents either misunderstood the concept of being sexually active[56] or did not pay attention while filling the survey[57]. As *figure 11.* shows,

[54] The number of respondents was 93.
[55] The selection of these independent variables follows the methodological approach rendered by CSE.
[56] In this study, sexually active refers to those individuals who have had sexual intercourse at any point in life involving penetration (the insertion of a man's erect penis into a woman's vagina). In contrast, respondents might have assumed that sexually active referred to have had sexual intercourse recently or regularly.
[57] The age of the respondents in the sample is from 15 to 17 (*See limitations section*).

there were 26 respondents that reported being sexually active (*see a*), in contrast with 36 respondents (*see b*) that reported using contraception in their last sexual encounter.

Figure 11
Cross Tabulation

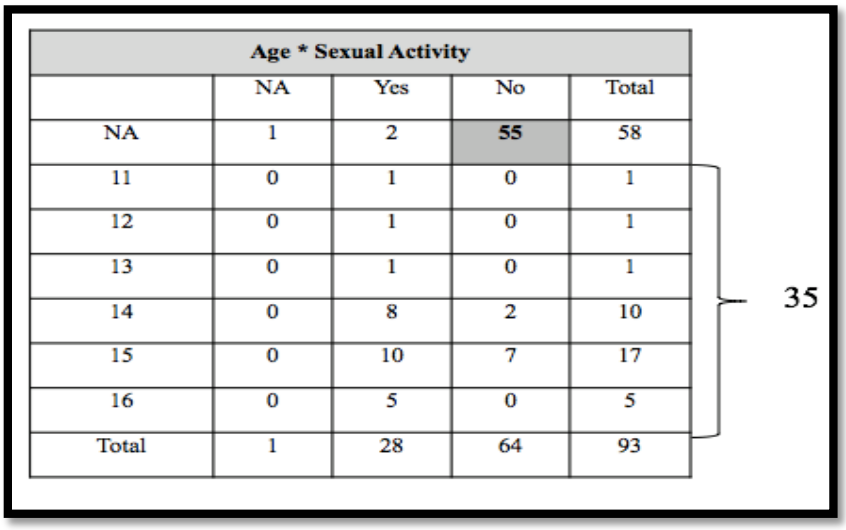
Sexually active * Used Contraception in last sexual encounter					
		NA	Yes	No	Total
Sexual Active	NA	1	0	0	1
	Yes	0	**26 (a)**	2	28
	No	43	10	11	64
Total		44	**36 (b)**	13	93

This inconsistency represented the main measurement validity problem in order to accurately identify those respondents who were sexually active in the sample. Therefore, it was decided to contrast these results with yet another question in the survey to confirm their sexual status that fit the criteria of 'sexually active' defined in this study:

- How old were you when you first had sex?

For this specific question, 35 respondents registered an age when they became sexually active. Additionally, a cross tabulation between age and sexual activity showed that 55 respondents did not report an age of becoming sexually active, confirming the initial inference that most respondents were not sexually active as defined in this study (*See figure 12*).

Figure 12
Cross Tabulation



Age * Sexual Activity				
	NA	Yes	No	Total
NA	1	2	**55**	58
11	0	1	0	1
12	0	1	0	1
13	0	1	0	1
14	0	8	2	10
15	0	10	7	17
16	0	5	0	5
Total	1	28	64	93

Based on this, an assumption was made with regards to those who were not sexually active (55), namely that they were abstaining from engaging in sexual encounters as a mean of contraception. Consequently, to overcome the before-mentioned problems it was decided to recode the dependent variable:

$y = \begin{cases} 0 \\ 1 \end{cases}$ which means:

0= (had <u>not ever been sexually active</u> or used contraception = Safe sex)
1= (had sex without contraception = Unsafe sex)

This way, all the respondents that were not sexually active were classified as "0". This classification follows the mentioned logic that abstinence, i.e. not ever having been sexually active, is a type of birth control. And, those that answered "yes" to using contraception in their last sexual encounter were also classified as "0". This way it was possible to have a valid measure of sexual activity and use of contraception in the dependent variable.

The recodification results showed the following:

Figure 13
Recodification Safe Sex and Not Safe Sex

Safe sex (0)	91
Not safe sex (1)	2
Total	93

The results show that 91 respondents were using a type of contraception and only 2 respondents did not use any type of contraception in their last sexual encounter. From these results, it was not possible to estimate the effect of information on avoiding sexual risky behaviours as 97.8 per cent of this sample reported using contraception (see methods section for details on the limitations in this study).

This section informed how adolescents from the selected schools in Mexico City access, understand and use SRH information. The discussed limitations that obstructed the identification of sources of information that influenced adolescents in practicing safe sex was also included.
The latter was decided in order to highlight the importance of knowing which of the sources of information had a higher effect on adolescents' knowledge on how to practice safe sex. The challenges and complexities of the current knowledge held by respondents will be further analysed with the use of theoretical tools in the next section.

7. Discussion

Bandura's (2004) SCT model will be used in order to inform the individual-agency level of adolescents. As empirical results show, this level is influenced by different sources of SRH information. The majority of adolescents in this study, acquire contradictory and deficient information which leads them to being unaware on how risky behaviours might negatively affect them. As knowledge of health risks and benefits are the main determinants to health behaviour change (Bandura, 2004) it is evident that the misinformation of adolescents, spread by myths and

judgemental opinions, represents one of the main barriers that could potentially contribute to the practice unsafe sex. This could also feed the self-perception of adolescents as impervious or invulnerable to the consequences of risky sexual behaviour, which contributes to their apparent lack of motivation to pay attention to risky behaviours and their consequences due to a false assumption that "this will never happen to me" [58].

In this sense, a gender approach on adolescent self-perception reveals contributing factors that hinder female adolescents' practices of safe sex. The opinions of female respondents replicated what other male respondents referred to, namely that women are irrational and dependent individuals when talking about sex. Some female respondents assumed that an older and responsible male partner might "take care" of them. Moral considerations and opinions that adhered to a concept of "appropriate femininity" influenced female standpoints on abortion and casual sex. Nevertheless, some female respondents seemed more informed in comparison to male respondents about contraception and sexual health. Female respondents seemed more enthusiastic to engage in further dialogue about ways to enhance their sexual agency, learning about where to practice safe abortions and seek ways to assert their control during sex and enhance pleasurable sexual experiences.

In addition, there are significant structural and environmental determinants that could strongly influence ASRH outcomes. The most important determinants in this study correspond to those identified by Sommer and Mmari (2015) as informal social laws related to a certain degree of secrecy of adolescents discussing sexuality. This could be explained by an apparent distrust of parents and teachers and ineffective institutional campaigns.

Furthermore, exposure to cultural messages from family members and other conservative groups are absorbed and replicated in most of the respondents' opinions . Embarrassment, anxiety or social vulnerability seem to be partially present in some respondents. The biggest barrier to access resources is insufficient education to maintain good SRH.

[58] This refers to unintended pregnancies or STIs.

ICT accessibility, specifically for the purpose of accessing SRH information, is conditioned to trustworthiness and clarity of content. Most respondents have access to internet-enabled ICTs and reported to have technical abilities and literacy to use them. However, the fact that most of the mobile apps related to SRH were reportedly available only in English is a barrier for the dissemination of information to Mexican adolescents.

Another barrier relates to the internet-related infrastructure in schools and public spaces. This was observed by the researchers during data collection. Gendered norms in relation to the use of ICTs did not represent a barrier to female adolescents in this study, as most of them did not report additional pressures that would disproportionately hinder their access and usage of ICTs.

The assessment of ENAPEA's main online platform "comolehago.org" using Mcguire's (2013) communication persuasion model reveals a significant lack of effective persuasion techniques. The overall perception of adolescents of the content from the online platform revealed the inadequacy of the campaigns' inputs, mainly the lack of attractiveness of the message. The online platform seems to offer accessible features that resound well with what adolescents seem to be interested in e.g. social media, blog posts, internet "memes[59]" and YouTube links. Nevertheless, the output persuasion techniques become defective as adolescents seem only partially captivated by the message and do not pay attention to the overall content. The implausible situations portrayed in the video and the over-acting of performers, the lack of clarity and misunderstanding of some of the messages, and the preference to have a real-time interactive channel to communicate specific doubts make this strategy unlikely to become effective. This campaign appears to be taking best practices from campaigns in other countries, rather than considering the points of view of participants when these types of campaigns are being designed. This highlights the unused potential of ICTs for enhancing the spread of information based in media channels such as mobile apps. However, these should not be over-enthusiastically used without considering the complexities surrounding adolescents' access to SRH in Mexico City.

[59] An "internet meme" is an image spread rapidly from person to person via the internet, largely through internet-based E-mailing, blogs, forums, image boards, social networks like Facebook, Instagram or Twitter, instant messaging, and video hosting services like YouTube.

8. Conclusion

ASRH is a crucial element for sustainable development as it impacts all three of its dimensions. In Latin America, adolescent unintended pregnancies contribute to inter-generational poverty cycles which hinder social mobility and exacerbate inequality. The case of Mexico stands out as the policy efforts to tackle this issue have not rendered the expected results. This case study explored how adolescents in Mexico City access, understand and use a variety of SRH sources of information.

Even though there is a contrast between information-rich and information-poor adolescents, their friends and parents, and to a lesser extent the internet, were the most common sources of SRH information. Education and government information sources were not prevalent in adolescents' perspectives. The latter is alarming as evidence shows that adolescents' knowledge is grounded on contradicting information, myths and moral judgments that could contribute to downplay the consequences of sexually risky behaviours.

A participatory information exchange process informed this study about adolescents' willingness to use internet-enabled mobile ICTs as an alternative mean to access SRH information. This innovative channel was welcomed by adolescents as long as it guarantees access to trustworthy and clear content offered in a language they could understand, along with real-time reliable experts that could provide guidance.

This study provides sufficient information to supplement Mexico's national efforts, particularly ENAPEA and its long-term objective of implementing and enhancing CSE to adolescents, and consequently reducing ABR by 2030.

9. Public Policy Recommendations and Suggestions for Future Research

This study aimed to underscore the importance of elucidating the individual and structural factors that influence the access, understanding and use of SRH information by adolescents in Mexico City. The motivation of the study was to inform public policy about the innovative and accessible channel offered by ICTs, which are highly used among adolescents in Mexico City. A mobile app which allows internet-savvy adolescents to communicate with SRH experts, assuring their confidentiality and anonymity could be beneficial for the purpose of implementing and enhancing CSE in Mexico. It could offer rewards for users in exchange for engaging in a "learning by playing" process, which could reduce their sexually risky behaviours.

Further research, following the procedure of this study can help to build a similar binary logistic regression model taking into consideration sampling and conceptual challenges faced in this research. Additionally, a study in similar circumstances with adolescents could benefit from a longitudinal control case study based on a mixed methods sequential exploratory design which allows enough planning to conduct internal validity procedures e.g. individual interviews to corroborate information after focus group discussions and proper measurement validities after collecting quantitative data through a survey.

Future research could explore structural factors in more detail in order to delve into the role of alcohol consumption as a factor contributing to unintended adolescent pregnancies in the context of Mexico. The latter has also been identified by ENAPEA, yet no studies have dealt with this in detail so far. Also, sexual abuse could be further explored as another factor surrounding adolescent pregnancies. Finally, studies could be greatly beneficial to compensate the striking gap in the literature related to adolescent's exposure to STIs and the burden they represent for this particular age group in the context of Mexico.

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11. ANNEXES

Annex 1

Instructions: Please mark, circle or underline your answer, there are questions in which you will have to write your answer. All your answers are anonymous!						
1. Gender:	M	F				
2. Age:						
3. Municipality:						
4. Schooling:						
5. Have you repeated school year?	Yes	No				
6. Do you plan to continue with your (high school) education?	Yes	No				
7. Do you know the grade level of your parents? (If you answered no, go to question 9)	Yes	No				
8. What is the grade level of your parents?	Primary	Secondary	High School	University	Postgraduate	N/A
9. Are you confident?	Yes	No				
10. Do you consider yourself creative?	Yes	No				
11. Do you see yourself as someone successful in the future?	Yes	No				
12. Do you consider yourself perseverant?	Yes	No				
13. Do you consider yourself a happy person?	Yes	No				
14. Do you think you have many friends?	Yes	No				

15. Do you think you belong to a group? (Emos, dark, hipster, etc.)?	Yes			No	
16. Is your family religious?	Yes			No	
17. Do you practice any religion?	Yes			No	
18. Do you attend Mass frequently?	Yes			No	
19. Do you participate in religious festivities in your community?	Yes			No	
20. Do you work?	Yes			No	Sometimes
21. In case you work, how much is your income (salary) approximately?	$1,000			$2,000	More than $3,000
22. Who do you live with?	Both parents	Mother	Father	Grandparents	Other (write down your answer):
23. Do you contribute to the expenses of your home??	Yes		No		Sometimes
24. How much do you contribute to the expenses of your home?	All		1/2		Nothing
25. Do you have social security?	Yes			No	
26. Which type of scheme?	IMSS	ISSSTE	Seguro Popular		Government of Mexico city
27. If you do not have social security, where do you go when you are sick?	Private Doctor		Pharmacies (ex: Simi)		Other (write down your answer):

28. Do you consider that your health (physical and mental) is in good condition?	Yes	No		
29. Have you visited the doctor or hospital in the last month?	Yes	No		
30. Do you practice sports regularly?	Yes	No		
31. Do you drink alcohol?	Yes	No		
32. Do you drink alcohol more than once a week?	Yes	No		
33. Where do you drink alcohol?	Parties	Bars/Clubs	Grocery Stores (Oxxo, etc.)	Other (write down your answer):
34. Do you feel pressured by your friends to drink alcohol?	Yes	No	Sometimes	
35. Have you ever tried drugs?	Yes	No		
36. How long does it take to get to school?	Less than 30min	30 min	1 hour	More than 1 hour

37. Do you use more public transportation (metro, metrobus, bus, combi, etc.) than private transportion (car of your family or friends, bike, etc.)?	Public				Private	
38. Does the traffic and the time between your house and your school prevent you from spending time in your studies?	Yes				No	
39. Do you have a computer at home?	Yes				No	
40. Do you have your own mobile phone?	Yes				No	
41. How much do you spend on the internet on your mobile phone a week	I have a monthly plan	30	50	100	200	More
42. ¿Do you have an ipad of your own?	Yes				No	
43. Do you communicate with your friends through text messages?	Yes				No	
44. Do you communicate with your friends through whatsapp?	Yes				No	
45. Do you connect to internet from your school?	Yes				No	
46. Do you use social media?	Yes				No	

47. Which social media do you use more frequently?	Facebook	Twitter	Snapchat	Other (write down your answer):
48. You use internet for…	School	Entertainment	Both	
49. Do you access the internet to get information about sex?	Yes	No		
50. Do you think that all the information on the internet is reliable?	Yes	No		
51. Are you sexually active?	Yes	No		
52. Do you use contraception?	Yes	No		
53. What type of contraceptive methods do you use?	Condoms	Pills	Other (write down your answer):	
54. In case you use, where do you get your contraceptives?	Hospitals	Pharmacies	Grocery Stores (Oxxo, etc.)	Other (write down your answer):
55. Do you talk to your friends about sex?	Yes	No		
56. Do you talk to your parents about sex?	Yes	No		

57. Do you talk to your teachers about sex?	Yes	No		
58. Who do you prefer to talk about sex with?	Friends	Parents	teachers	Other (write down your answer):
59. Have you spoken to any institution to get advice on sex?	Yes	No		
60. Do you have a partner?	Yes	No		
61. Do you have a friend with "rights" (free)?	Yes	No		
62. How old is she/he?	(write down your answer):			
63. How old were you when you first had sex?	(write down your answer):			
64. Did you use any method of contraception during your last sexual encounter?	Yes	No		
65. Have you ever had any evidence of Sexually Transmitted Diseases (STDs) and/ or HIV?	Yes	No		
66. Have you ever had a Sexually Transmitted Disease (STD)?	Yes	No		
67. If you have doubts about sex where you do you look for information?		(write down your answer):		

68. Do you consider that the sex information you are given at school is sufficient?	Yes	No
69. Have you heard about "comolehago.org"?	Yes	No
70. Have you heard about the program “Servicios Amigables”?	Yes	No
71. Do you think that government campaigns on sexuality (pregnancy prevention, etc.) are good?	Yes	No

¡Thank You!

Annex 2

Role Play Focus Groups

2 participants: one female, one male. The female participant reads Miguel's dialogue and male participant reads Paty's dialogue.

"Paty: I'm at the party and the guy from 3rd grade B is watching me. The truth is that I have always liked it but I feel very shy to talk to him. My friends are telling me to have a few beers and that will give me courage to get closer.

Miguel: Paty from 3rd grade D, looks gorgeous and is looking at me ... I think she does not have a boyfriend. I'm already a bit drunk and I want some, so I'm going to get closer.

Narrator: The following month ...

Paty: I haven't got my period ..."